The OIL WEEKLY

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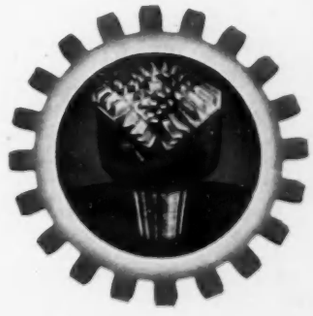

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LOOKING AHEAD
. . . with the Editor

THE OIL WEEKLY's big Annual Yearbook-Forecast Number will be published next week. It will not be simply statistics, but the answer to almost every question which can be asked on 1943 oil consumption, production, drilling, exploratory operations, pipe-line construction and other phases—plus a forecast of coming trends and conditions for the industry.

With the second year of war having brought further vast changes to the petroleum industry, including the question of whether enough oil can be produced to fulfill necessary requirements, a review of the past year's economic developments and a prediction of the prospects for the new year are of greater significance than formerly. Consequently, special effort has been made to make this issue more outstanding and complete than ever before.

In addition to the statistical material and economic discussions, this issue will contain a special section on PAW, the agency which has had such an influence on oil's wartime operations.

THE OIL MAN'S CALENDAR

FEB. 20–24	**American Institute of Mining and Metallurgical Engineers, Waldorf-Astoria, New York.**
MAR. 21–23	**American Association of Petroleum Geologists, Society of Exploration Geophysicists and Society of Economic Paleontologists and Mineralogists, Dallas.**
APRIL 10–12	**National Association of Corrosion Engineers, annual meeting, Rice Hotel, Houston.**
NOV. 13–16	**American Petroleum Institute, Stevens Hotel, Chicago.**

THE OIL WEEKLY

ENGINEERING « NEWS » STATISTICS

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Some 6,000 years ago, man discovered that oil from the earth afforded light and heat and was of medicinal value. Oil became essential and with each new-found use a higher plane of living followed. Ingenuity developed the early wheel which moved heavy loads—so an era of transportation, a new cycle of life began. Oil became an industry, with research and chemical laboratories opening the way to a machine age with new processes, new product developments—each a step to better living.

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The Changing Panorama

National System of Highways Recommended

IN PRESIDENT Roosevelt's recent message on the system of national highways, he incorporated a report made by the National Interregional Highway Committee which had been appointed by the President to investigate the need for a limited system of national highways.

The report recommends the designation and improvement to high standards of a national system of rural and urban highways totaling approximately 34,000 miles and inter-connecting the principal geographic regions of the country.

According to the report, the recommended system follows in general the routes of existing federal-aid highways, and when fully improved will meet to optimum degree the needs of interregional and inter-city highway transportation. Its development also will establish a transcontinental network of modern roads essential to the future economic welfare and defense of the nation.

While the annual rate of expenditure to accomplish the improvement of the rural and urban sections of the system over a reasonable period of years will be dependent upon the availability of manpower and materials, and upon other factors, the required expenditure is estimated at $750,000,000 annually. The over-all expenditures would be approximately equally divided between urban and rural sections of the system.

Better Drilling Program Would Give Gas Supply

FROM West Virginia, David B. Reger, a consulting geologist, writes, "Of the total drilling in West Virginia in 1944 an increased proportion will be done by the larger companies because the small independent operators have been utterly bewildered and discouraged by the complex routine that is now required for obtaining materials and by the increasing cost and difficulty of bringing any well to completion. Furthermore, a very considerable amount of drilling, particularly for gas, that would be done under such incentives as an unlimited market, a reasonable increase in field prices and a sensible relaxation of drilling control, has been forestalled by the prospect of wholesale importation of gas from the Southwest, at a cost that is reported to be considerably above the average field price.

"In my opinion, the additional supply of gas needed by the Appalachian region could have been supplied by such adjustments as I have indicated, and with a much smaller outlay of strategic materials. There is no actual scarcity of gas in the ground. In the southern counties (of West Virginia) huge quantities of new gas can be recovered by the simple expedient of acidizing both new and old wells that tap the Big lime of Mississippian age."

Relief Sought for Drilling Bottlenecks

CHIEF bottlenecks in the drilling industry are shortage of heavy trucks, scarcity of tool joints, and the need for better application of manpower, according to American Association of Oilwell Drilling Contractors. Undoubtedly many skilled drilling crewmen now employed in other defense industries should be working in the drilling industry, it was pointed out.

Excellent cooperation exists between oil companies and drilling contractors, in that the companies are working closely with the contractors to reduce the "down" time between completion of one well and start of another. This cooperation has resulted in increased efficiency from existing drilling rigs, of which there is a prospective shortage.

Moving time has increased in some areas as much as 300 percent, due to shortage of trucks, reports show. The moving time for the entire country has increased from about 3½ days to more than 10 days, one Washington agency has reported.

The shortage of tool joints has been acute, but steps are being taken to cure this trouble, it was stated.

PAW has been most helpful in working out pressing problems confronting the drilling industry, and now is doing everything possible to assure a flow of necessary materials needed for completing wells required under PAW's greatly expanded schedule, the informant said.

Lack of Equipment Progress a Handicap

THERE has been much talk of rig equipment wearing out under the strain of operating without normal replacement, but there has been little mention of the lack of progress in machinery and practices as a result of manpower and material shortages. This also is an important phase of the critical drilling equipment picture that appears to lie ahead of the industry. Equipment design has not kept pace with the times or problems.

A notable example is the drilling of deep Ordovician tests in West Texas, where a tough chert section consumes an unusually large number of bits. In normal times, manufacturers with the encouragement and assistance of oil companies would have tackled the problem immediately. If past performance means anything, they probably would have designed bits that could do this job better than current wartime bits are doing. They have not had the manpower to devote to the task, and if they did design an improved bit it is doubtful if the proper alloy steel that would likely be required could be obtained.

Pratt Champions Arctic Oil Sources

POINTING to the probability of the post-war development of air transport routes via the Arctic region, to Russia and China, Wallace E. Pratt, vice president of Standard Oil Company (New Jersey), calls attention to the need for developing oil fields and refineries in the far north to provide advantageously-located sources of fuels and lubricants that will be needed along the routes. In an article in Harpers Magazine for the current month he states that oil sources in the Arctic regions have been too long neglected, and may very possibly be found to be half as large in volume as those of the United States.

"Only the forward-looking Russians have availed themselves so far of these potential sources of fuel and energy," he stated. "Perhaps the rest of us have yet to grasp the fact that the Great Ice Age is already behind us . . . We should begin to follow up the retreat of the ice, and reclaim for mankind the vast empire released to us by the return of the sun."

Manpower Shortage and Scarcity Of Materials Slow Drilling

Poor trucking service also a factor which combined with others will have influence on 1944 drilling, survey just completed by American Association of Oilwell Drilling Contractors discloses

SHORTAGE of manpower, scarcity of materials, and deteriorated trucking service are hampering drilling operations, according to a survey conducted by the American Association of Oilwell Drilling Contractors. These factors are certain to have a decisive influence on the volume of drilling that will be done during 1944.

Definite indication of the extent and locality of the shortages in various types of drilling equipment have been made available to PAW as a result of the survey, which was undertaken in an effort to determine just how far services and supplies were hampering drilling operations. Returns from drilling contractors operating about 400 rotary rigs were received, revealing an excellent cross-section of shortages. PAW has tabulated the reports, and is making the study available to all interested parties.

PAW is calling for a minimum of 24,000 wells to be drilled during 1944, but other sources indicate the industry has plans to drill an even larger number of wells. However, it will be necessary for the industry to have the men, materials and other essential services if this enlarged drilling scale is achieved.

As might be expected, effects of manpower and material shortages are greatest in Districts 2 and 3. This is due, of course, to the fact that these two areas are responsible for the greatest amount of drilling. Of the 24,000 wells setup by PAW, 17,175 have been allocated to Districts 2 and 3, while 6825 are allocated to the rest of the United States.

Tabulation of Reports from Drilling Equipment Survey, January 1, 1944

	DISTRICT				Total U.S.
	Two	Three	Four	Five	
Reports Tabulated	30	45	3	7	85
Mechanical Rigs Operating	128	111	5	40	289
Steam Rigs Operating	0	100	0	26	126
Rigs Stacked	11	47	2	1	61
Manpower Difficulties	30	45	2	7	84
PAW Restrictions	0	4	0	0	4
Services Hampering Operations					
Cementing	1	2	0	0	3
Electrical Logging	2	1	0	0	3
Rig Building	7	28	2	0	37
Well Shooting	0	0	0	0	0
Rental Tools	1	4	0	2	7
Machine Shop	19	25	3	5	52
Welding	11	14	0	2	27
Trucking	21	37	2	7	67
Fuel and Delivery	7	10	1	2	20
Pits	1	3	0	0	4
Supplies Hampering Operations					
Rock Bits	9	11	2	0	22
Core Barrels and Heads	4	3	0	2	9
Tool Joints	20	29	1	3	53
Drill Collars	20	25	2	3	50
Drill Pipe	21	32	1	4	58
Fishing Tools	3	3	0	2	8
Transmission Chain	9	7	0	1	17
Loading Chain	8	16	0	1	25
Cordage	10	12	1	5	28
Rotary House	5	8	1	2	16
Wire Rope	4	9	2	0	15
Hand Tools	15	20	2	2	39
Lanterns and Batteries	15	23	1	3	42
Lighting Generators and Equipment	14	16	2	2	34
Light Wire	17	18	2	3	40
Nails	1	4	0	1	6
Steel Tapes	2	7	0	2	11
Belting	1	2	0	1	4
Mud Testing Equipment	6	6	0	1	13
Fittings	0	1	1	0	1
Engine Repairs	25	30	3	5	63
Pump Repairs	18	25	2	5	50
Rig Repairs	9	15	1	2	27
Anti-freeze	15	24	1	2	42
Boiler Repairs	1	10	0	1	12
Fire Brick	0	2	0	1	3
Lumber	5	10	0	0	15

Manpower Difficulties

Of the replies received, 84 stressed manpower difficulties as a major obstacle to field operations, especially drilling. Seventy-five of these 84 replies were from Districts 2 and 3, in the order of 30 and 45, respectively. Emphasizing this situation also, 61 rigs were reported as stacked, 58 of which were in Districts 2 and 3. A total of 126 steam rigs were reported as operating, 100 of which were from District 3. Mechanical rigs in operation were shown at 289, with 239 in Districts 2 and 3.

Balance to Unskilled

The list of oil-well services shown as handicaps to the progress of drilling is made up of activities dependent more upon manpower than upon equipment. The percentage of skilled and unskilled labor called for in these services is about equally divided, with the balance swinging slightly to the unskilled side. For instance, 67 reports stressed trucking as a serious difficulty.

Activated by results of their survey, the American Association of Oilwell Drilling Contractors has already started work to try to remedy the acute shortage of oil-field trucks. At a meeting of the Executive Committee held in Dallas, January 10, a motion was passed calling for the association to petition PAW to arrange with the necessary governmental agencies to have a sufficient number of trucks allotted to the oil-producing industry for providing the necessary transportation of drilling equipment and supplies for the drilling of oil wells.

Trucking

The manpower shortage is also affecting the trucking situation. Moving and handling oil-field supplies by truck calls for some experience, especially truck driving. Handling equipment such as makes up the average oil-field load can be done by common labor under experienced supervision, though perhaps not with the same speed or safety as with men familiar with this type of work.

Machine-shop operations, a type of work dependent wholly on skilled or at least semi-skilled workmen, were noted by 52 replies as hampering drilling. Since material shortages have to be overcome to some extent through strict maintenance of old supplies and through large-scale salvaging efforts, the machine shop is a very necessary link in the chain of facilities needed to get maximum service from all kinds of equipment.

Rig building is vitally hindered as shown by 37 reports. Here again moving and assembling of materials are basic operations calling for transportation facilities and adequate skilled workmen.

Welding, a specialized trade, was listed on 27 reports as an obstruction to operating efforts. Much progress has been made recently in training welders and the time required to learn the trade has been shortened. However, experience is fundamental to successful results and a brief period of training is essential be-

fore a welder can pick up the torch and go to work.

Other services listed as hampering drilling included cementing, electrical logging, well shooting, rental tools, fuel and delivery, and digging pits. Fuel and delivery service was noted on 20 reports. The others were mentioned in a few instances only.

The recruitment program recently formulated by War Manpower Commission, PAW, and the Association of Drilling Contractors has been taken under advisement by the association. The plan has been modified somewhat to permit drilling contractors to negotiate for men within their local areas, with clearances indicated through the local United States Employment Service offices. Up to now, however, the drilling industry has been forced to fill its depleted ranks largely through its own ingenuity with very little outside help. The recruitment program may be further modified to meet industry needs.

Short Supplies

Supplies hampering operations included the following: rock bits, core barrels and heads, tool joints, drill collars, drill pipe, fishing tools, transmission chains, loading chain, cordage, rotary hose, wire rope, hand tools, lanterns and batteries, lighting generators and equipment, light wire, nails, steel tapes, belting, mud testing equipment, fittings, engine repair parts, pump repair parts, rig repair parts anti-freeze solutions, boiler repair parts, fire brick, and lumber.

Engine repair parts present the greatest difficulty as shown by the survey, with 63 reports stressing this shortage. Drill pipe is the next most serious item as indicated by 58 reports. Then come tool joints and pump repair parts each mentioned on 50 reports. The others vary in acuteness, but all items were noted as presenting a serious problem.

A. H. Rowan, association president, has spent much time during the past six months with Frank Watts, D. R. Knowlton, Glenn A. Campbell and other representatives of PAW in an effort to secure a fairly constant flow of drilling materials needed to carry out an expanded drilling program.

Location of Stocks

It is the opinion of members of the drilling industry that field stocks should be located at strategic points not more than 12 hours' freight or express time from the point of use.

A series of meetings is being held throughout the various districts at this time to further elimination of bottlenecks and secure a balanced supply of equipment insofar as is possible. Transportation is the main topic of consideration at these meetings. Association officers have been working for nearly two years to assure delivery of materials necessary to prevent serious shutdowns. With the cooperation of PAW, it is hoped that the problem will be met sufficiently to prevent any further blocking of drilling activities.

This array of items, in reality a catalog of all the important equipment used in drilling, suggests how hard the way will be for the oil operator this year. In addition, the shortages keynote the importance of cooperation of all parties and agencies concerned with providing supplies. The responsibility of making the most of the situation is equally divided among operators, PAW, manufacturers, WPB, and the various organizations working to see that the demand for oil is met.

A Real Opportunity

By RAY L. DUDLEY, Publisher

IT NOW appears that the American oil industry has a pretty heavy drilling campaign ahead of it for several years. At the close of 1943, the country's drilling was about three fourths of a year behind, with prospects that even with increased drilling in 1944, the close of the year will find the domestic industry approximately a full year's drilling short for the time between Pearl Harbor and the end of 1944.

This should assure heavy operations and real opportunity for oil workers for several years to come as, obviously, it will be impossible to make up the lost drilling in a year, two, or even three years.

Abroad, postwar days will see heavy increases in drilling.

This means that when the boys come home from world-wide battle fronts there will be room for them and room, too, for those new men who have come into the industry while the boys have been fighting abroad.

The new man starting to work in the oil industry today has a real opportunity, provided he takes advantage of it to learn as rapidly as possible and to lend his full efforts to the job at hand of drilling wells and producing oil under a manpower shortage.

Many men now entering the oil fields as inexperienced workers will find a new life work, of an interesting and profitable nature. Their opportunities for work will be found here in the United States but many of the best of them will have an opportunity abroad.

And speaking of opportunity seized, we are reminded of two men who are our close personal friends—(their experience, however, is the counterpart of many others). One went to South America several years ago as a driller. He took an interest in his work, was promoted time after time until he was made president of his company. Quite a jump. Another had a similar experience, although he started his foreign service in still another country.

The man who earnestly seeks to improve his position will do so by attention to orders, by studying how he can improve his usefulness to his company. This is not preaching—it can be attested by hundreds of instances throughout the oil country, not only abroad, but right here in the United States.

A few years ago Wallace E. Pratt, one of America's great petroleum scientists, and a man who proved for himself, and by himself, that opportunity awaits the man in the American oil industry who applies himself, wrote, in an article appearing in THE OIL WEEKLY:

"It is no mere coincidence that most of the oil fields of the world have been found by Americans. Search for oil fields succeeds best through the method of intimate and all-inclusive cooperation in which American workers excel."

He was talking about the cooperation between geologists and workers in other departments, but what he said about cooperation and its part in successful venture can well be applied to anyone in the oil fields from the roughneck up.

The job at hand in these war times calls for loyal, hard work, for study toward self improvement—and opportunity to succeed is open to any intelligent man seeking to go to work for an oil company.

Seal-welding of drum ends with permanent attachment for hose utilizes unit for volume chamber, while regulator hook-up to outgoing fuel line imposes only low-pressure load on packing of single swivel joint required to permit rotation of drum for hose length adjustment.

Combined Reel and Volume Chamber Boosts Pulling Unit Efficiency

Permanent tie-in between hose and enlarged drum serving as volume chamber permits direct connection to available gas line without piping delay. Unit mounting of regulator on drum disk reduces possible loss to single swivel joint exposed only to low-pressure fuel

SIMPLIFYING equipment requirements and leaving more room available on the bed of their portable pulling unit, one company has built an ingenious combination fuel-hose reel and volume tank which is carried in an out-of-the-way place under the side of the truck bed. To each end of a 24-inch length of 11¾-inch casing was welded a steel flange, making a reel for the rubber fuel hose. One end of the hose ties into a fitting projecting into the reel and this in turn conducts the gas through a ¾-inch pipe which delivers it to the inside of the chamber. Gas is withdrawn through still another fitting and taken through a small diaphragm pressure regulator, after which the fuel is delivered, through a small packing gland, to the line leading up the pulling engine.

The reel is supported by two brackets bolted to the unit frame which hold it securely in place during the constant vibration to which it is subjected, yet it may be dismounted for repair or overhaul simply by releasing four bolts. To insure the reel staying in the exact position designed when the packing gland was installed, a short overhead bracket was welded to the side of the unit bed to limit end play of the reel to only the one direction.

Hooking up fuel lines is now a matter of only several minutes work following arrival at the well. No fittings have to be made up and all that is necessary is to pull out sufficient length of hose to reach to the location fuel outlet, open the valve, and the unit is ready to operate. In unreeling the hose, the entire assembly of fittings including regulator, revolves as a fixed unit on the side of the reel flange, so no moving parts can be worn out except the single gland near the supporting bracket.

Petroleum Reservoir Efficiency And Well Spacing

PART II—RECOVERY MECHANISMS

From a report of Reservoir Development and Operation Committee of Standard Oil Company (New Jersey) Affiliated Companies and of Humble Oil & Refining Company

SECTION A
Dissolved Gas Drive

IN DISSOLVED-GAS drive the oil is expelled from the sand solely by expansion of the gas released from solution in the oil, no extraneous source of energy or displacement medium being available.

To visualize the governing features of dissolved-gas drive, assume that a cubic foot of reservoir sand, with its contained oil and dissolved gas under virgin conditions, represents a miniature reservoir, with no free gas cap and no water drive available, and with oil and gas flow in the sand restricted to the horizontal. When a well penetrates this reservoir the low pressure point created allows the reservoir fluids to expand, driving oil and gas into the well. Pressure in the reservoir declines because of the fluid withdrawal and gas evolves from solution to occupy the space vacated by the withdrawals. As the oil and gas withdrawals continue, further pressure decline takes place and more and more free gas is formed. Gas flow increases and oil flow is impeded by rising gas saturation. This is a direct result of the saturation-permeability relationship and leads to gas depletion when oil recovery is still relatively low.

Conditions Required

The major requirements necessary to make a dissolved-gas-drive operation unavoidable, or nearly so, may be listed as follows:

a) Flat structure, usually with substantial stratification or low vertical permeability, obviating the possibility of appreciable gravitational segregation of gas released from solution.

b) Absence of a free gas cap or of a water body which could move into the oil reservoir.

c) High rate of production, substantially exceeding the ability of any water present to advance into the reservoirs, or the ability of a free gas cap, if present, to expand efficiently.

The two fundamental attributes of this recovery mechanism are (1) the horizontal flow of oil and gas, which provides no opportunity for the vertical segregation of the two fluids, and (2) the lack of extraneous source of energy or displacement medium, such as a free gas cap, or edge or bottom water capable of moving into the reservoir and displacing the oil and gas. Even where a structure is not flat, the horizontal type of flow may be brought about by low vertical permeability or by high flowing-pressure differentials occasioned by high producing rates and tight sands.

Behavior Characteristics

The dissolved gas drive mechanism is characterized by continually increasing gas saturation in the sand as depletion proceeds. Broadly speaking, the effect of gas saturation on oil-producing rates is such that when the gas saturation approaches 10 percent of the pore volume, gas flow (hence gas-oil ratio) increases rapidly, and when the saturation reaches approximately 20 percent to 30 percent, the flow of oil becomes negligible. In the course of this trend, the gas-oil ratio, as measured at the surface, rises to a peak and then declines rapidly as available gas becomes exhausted and the reservoir pressure approaches zero. Thus, oil recovery by purely dissolved-gas drive is inherently limited to a low percentage of the original oil in place.

Fundamentally, the gas-oil ratio and the reservoir pressure in this mechanism are solely dependent on the degree of depletion of the reservoir and hence may be related directly to the oil recovery. The exact behavior of gas-oil ratio and pressure during the depletion period will depend on the nature of the sand and fluids but is not dependent on operating practices or completion methods; assuming, of course, that one of the more efficient mechanisms cannot become operative.

Dissolved-gas drive is closely approached as a major oil-recovery mechanism in many fields produced at wide-open or at very high rates of fluid withdrawal. In an exact sense, dissolved-gas drive also takes place to a slight extent in the very earliest stages of production in almost any sand reservoir, simply due to the initial effects of production extending out from a well bore. This creates a temporary local dissolved-gas drive condition through expansion of the oil and gas around the well, but for practical purposes this phenomenon has negligible effects on the main body of the reservoir, provided that one of the other more efficient recovery mechanisms is brought into play before reservoir pressure has declined too greatly.

Should the dissolved-gas-drive mechanism be permitted to govern a large portion of a field's depletion period, even if during the later stages some aid becomes apparent from other sources of energy, the rapid pressure decline and release of gas from solution causes unfavorable changes in oil viscosity in the sand and the creation of a high free-gas saturation. These effects reduce the effective permeability to oil and may lead to loss in economic ultimate recovery because of decline in per-well producing rates to comparatively low values before any supplementary drive mechanism, such as delayed water advance, can come into play. Where conditions do not preclude the possibility of one of the other more efficient mechanisms becoming operative, the physical characteristics of the reservoir and the operating methods used will govern the degree to which the dissolved gas drive will apply and thus indirectly the degree to which possible economic oil recovery would be decreased by the effect of dissolved gas drive.

Oil Recovery Expectancy

Oil recovery expectancy under dissolved gas drive depends inherently upon the characteristics of the sand and of the contained fluids and upon the fact that, as previously pointed out, the practical limit on oil recovery is reached when the final gas saturation amounts to 20 percent to 30 percent of the pore space. This relationship will usually mean that after allowing for shrinkage

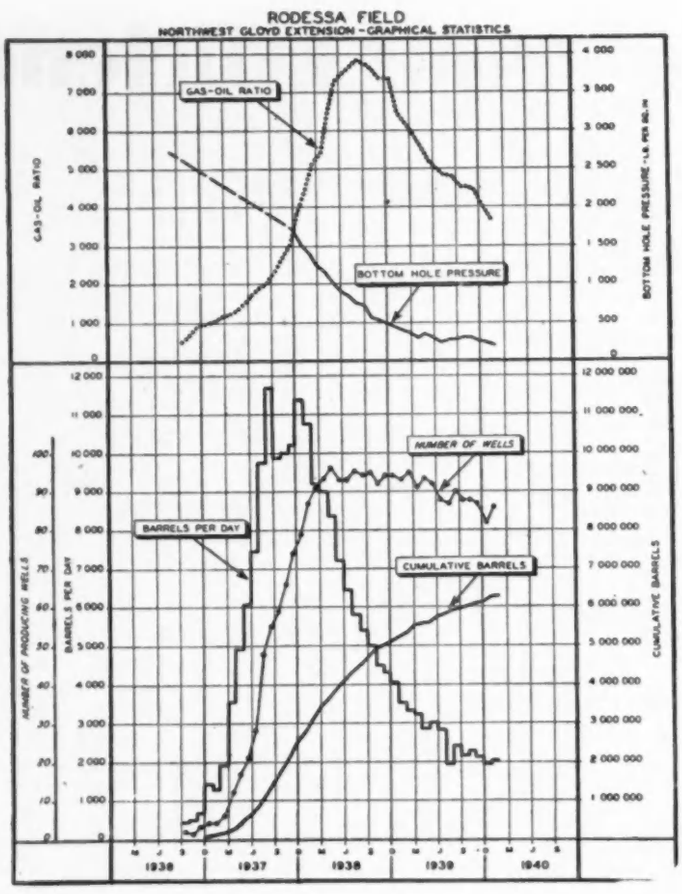


FIGURE 4

and interstitial water, oil recoveries of about 20 percent to 40 percent of oil in place will be possible.

Field Examples

Many old fields produced under wide-open flow had the rapid gas-oil ratio rise and subsequent decline which characterizes dissolved-gas drive and are believed to have operated essentially under this mechanism. Many indices point to a relatively low oil recovery having been obtained by primary methods from most of these fields. One of the best examples of this mechanism among the fields studied by the committees was the Gloyd-Mitchell zone of the Rodessa Field in Louisiana. This reservoir has closely approximated the typical dissolved-gas drive behavior over a major portion of its life. Availability of reasonably accurate data on this reservoir relating to gas and oil production, reservoir pressure behavior, and sand thickness and characteristics provided excellent correlation of the theoretical features of dissolved-gas drive with its manifestation in practice.

The portion of the Gloyd - Mitchell zone selected for study is practically flat and produces an oil of 42.8° API gravity which, under the original pressure of 2400 pounds per square inch, contained some 627 cubic feet of gas in solution per barrel of surface oil. No free gas was present originally in the area and no evidence of effective water drive has been noted. The wells drilled to the zone were produced at high rates and experienced rapid decline in production. The behavior of the gas-oil ratios, reservoir pressures, and oil-production trends closely followed the course expected for dissolved-gas drive over most of the depletion period, although evidence of some modification of the recovery mechanism, due to influx of fluid from adjacent areas, was observed in the later stages of depletion. Figure 4 shows the production history of that portion of the zone considered in the study.

The economic ultimate yield from the area was estimated at about 20 percent of the original oil in place. This low recovery efficiency is in accord with the theoretical principles of dissolved-gas drive discussed here. An interesting feature of this reservoir's development is the fact that many unsuccessful attempts were made to decrease gas-oil ratios by blanking off upper portions of the sand in producing wells and gun perforating only the lowest sand members. This lack of success is, of course, a reflection of what occurs under a typical dissolved-gas drive; since, if conditions preclude utilization of other drives, the gas-oil ratio is a function of depletion alone and is not materially affected by producing rate or mechanical features of the wells.

Among certain of the other fields studied by the committees, varying degrees of dissolved-gas drive were evident, and in all such cases the general trend of reservoir behavior was also in general accord with the indications of theory, it being clear that this mechanism is inherently characterized by low oil recovery.

SECTION B
Gas Cap Drive

The mechanism of gas cap drive involves displacement of the oil by free

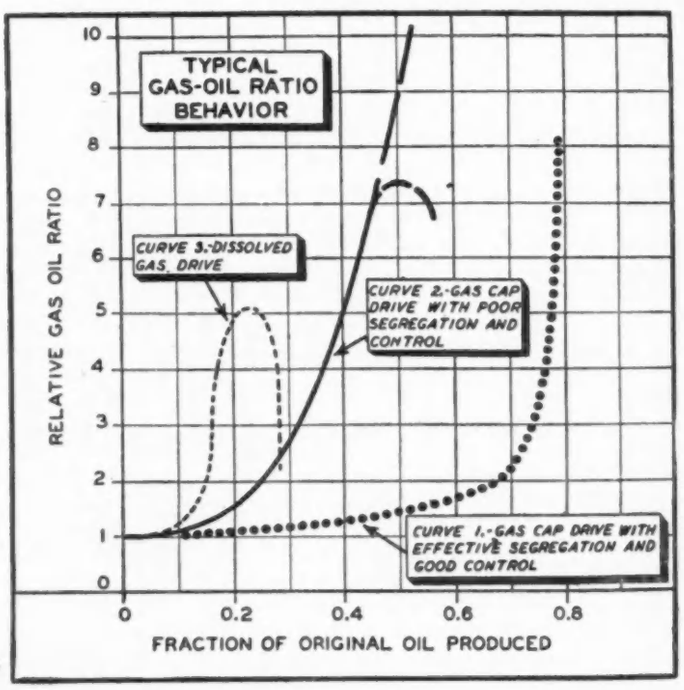

TYPICAL GAS-OIL RATIO BEHAVIOR
CURVE 3.-DISSOLVED GAS DRIVE
CURVE 2.-GAS CAP DRIVE WITH POOR SEGREGATION AND CONTROL
CURVE 1.-GAS CAP DRIVE WITH EFFECTIVE SEGREGATION AND GOOD CONTROL
RELATIVE GAS OIL RATIO
FRACTION OF ORIGINAL OIL PRODUCED

FIGURE 5

gas from a gas cap and is capable of yielding high oil recovery efficiency. In the gas-cap mechanism, the oil level in the reservoir falls as production proceeds, the gas cap expanding down into the oil sand and exerting a strong effect in maintaining pressure in the oil body. The maintenance of pressure on the oil accomplishes two major purposes; first, excessive evolution of dissolved gas within the oil sand is retarded and, second, driving or piston action of the expanding gas cap pushes oil down structure ahead of the gas, maintaining oil saturation in the oil body at comparatively high levels and sustaining the production rate of the wells. These two actions have a very beneficial effect in preventing or retarding increase in gas saturation in the oil sand and thus serve effectively to obviate many of the undesirable features which result therefrom. The retention of a distinct free gas cap above the oil body, or gravitational segregation of the two fluids, plays an important part in this mechanism.

Conditions Required

The major requirement for the utilization of a gas-displacement process is the presence of an original free-gas cap or the formation of an induced-gas cap. Aside from this broad consideration, the conditions required for efficient gas-cap displacement are as follows:

(a) The sand must have high permeability, since for practical purposes the prevention of channeling and by-passing of gas, both that evolved from solution and that previously in the gas cap, would be very difficult if this condition were not fulfilled.

(b) Pronounced structure is usually necesssary to aid gravitational segregation.

(c) The sands must be continuous and reasonably uniform to permit thorough displacement of the oil as the gas cap expands through the oil body.

(d) Some restriction of oil withdrawal rate is necessary to prevent gas channeling and by-passing.

(e) Careful gas conservation is usually necessary if the full use of the displacing ability of the gas cap is to be enjoyed. In some cases this may require return of gas to the crest of the structure.

Gas-cap drive is distinguished from the dissolved-gas-drive mechanism by three major characteristics. First, the displacing gas is supplied from extraneous sources, such as a free-gas cap, and hence is not limited to the quantity dissolved in the oil; second, by virtue of its displacement action, the extraneous gas moving into the oil sands, as oil and gas are withdrawn, replaces the produced fluid and thereby sustains the reservoir pressure and retards the evolution of gas from solution; third, a vertical component of fluid flow is introduced whereby gravitational segregation of oil and free gas within the sand may take place with very important effects on oil recovery.

In gas-cap drive, the saturation-permeability relationship is, of course, applicable in governing the simultaneous flow of oil and gas in the sand. However, the trend of gas saturation may be greatly modified by the influence of gravitational segregation of the fluids in the sand which will prevent the increase in gas saturation that would occur if free gas evolved from solution remained commingled with the oil, as in dissolved-gas drive. Two fairly distinct aspects are involved in gravitational segregation. The first is the upward migration of free gas as it is evolved from solution with pressure decline, the gas collecting in a free-gas cap rather than flowing more or less horizontally to the wells along with oil. The second phase is the retention of a distinct free gas cap as such, to hold pressure on the oil body and displace oil from the sand as production proceeds and the gas cap expands. A free-gas cap may, of course, have been present originally or it may be induced by either gas injection at the crest of the structure, commonly known as pressure maintenance, or by the gravitational segregation of evolved gas. It can be appreciated that the latter will be of smaller magnitude where high pressure is maintained on the oil throughout the depletion period, simply because under such conditions relatively little gas is evolved from solution, but it may be of major importance in determining recovery efficiency where, as is usual, reservoir pressure declines substantially during the life of a field.

The rate at which evolved gas will migrate upstructure and oil gravitate downstructure is a function of several factors involving sand permeability, the relative viscosities and densities of the oil and gas and, not least important in practical operation, the pressure differentials in the producing wells. In many fields the gas coming out of solution as pressure declines cannot migrate upstructure because high pressure differentials, created by a combination of high withdrawal rates and low sand permeability, pull the free gas into the wells as soon as it forms. Similarly, such differentials also lead to channeling and by-passing of gas from an existing gas cap, with attendant reduction in effectiveness of displacement. While the desired distinct segregation of gas and oil could in theory be accomplished in any type of reservoir, given infinite time and careful control, in practice it will usually be effective only where very permeable producing sand, low flowing pressure differentials, and a substantial measure of structural relief, perhaps 10 degrees or more of dip, are present.

Where gravitational segregation of oil and gas is not effective, the gas-cap-drive mechanism reverts to a behavior lying between that described above and the dissolved-gas drive, since lack of segregation will result in the production of excessive amounts of gas rather than its retention in the reservoir. Such a condition may come about in very flat structures affording little opportunity for control of the free gas, in tight sands,

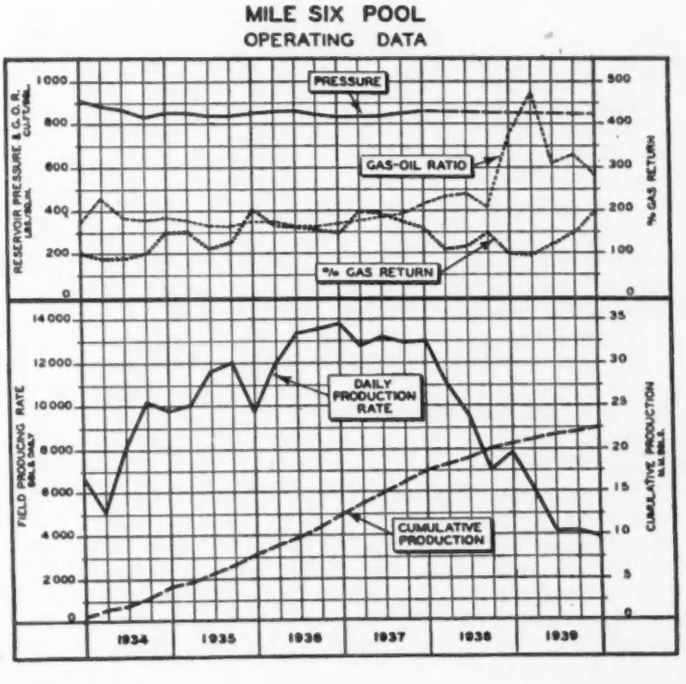


FIGURE 6-A

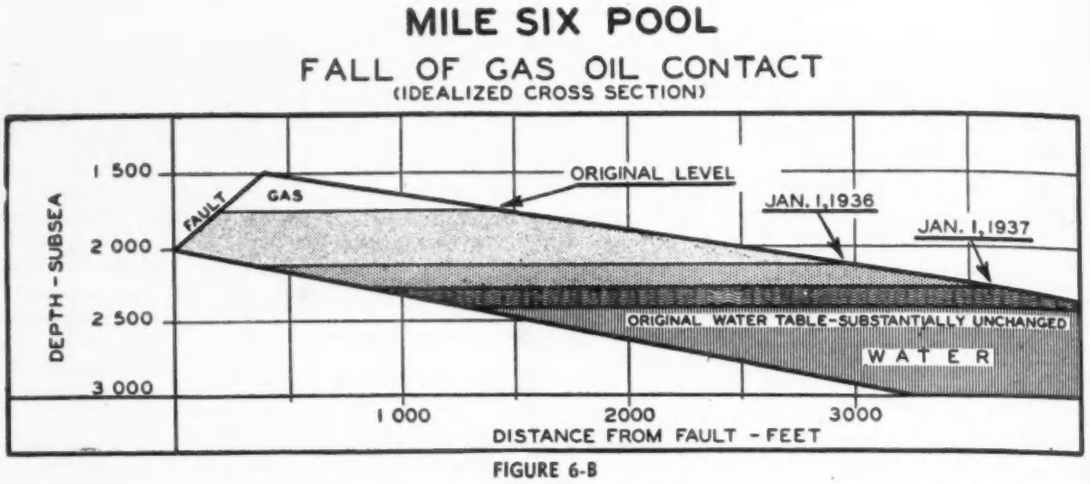


FIGURE 6-B

or in repressuring operations wherein gas injection is carried on throughout the oil acreage, as on a five-spot arrangement, and the gas commingles with the oil rather than accumulating as a separate and distinct gas cap. Similarly, in a field with a small original gas cap, the volume of gas represented thereby is insufficient to maintain the total reservoir pressure in any material degree, and the efficiency of the operation may revert in direction of dissolved-gas drive.

Channeling or by-passing can be avoided to some extent by careful well control to eliminate high pressure differentials which may induce the channeling. Another solution of the channeling problem is to blank off the sand members through which the gas by-passes to a well. This may, in some instances, be effected by the use of packers, but field experience indicates that the most satisfactory shutoffs are obtained by the cementing of blank pipe throughout the producing section, followed by selective perforation. With the latter type of completion, it is possible to go back into the well after channeling has taken place and to squeeze cement opposite the sand giving the trouble, thus forcing the gas to seek other outlets to the well and in so doing to displace oil from the tighter sand still remaining open.

The general nature of the foregoing trends and principles in terms of gas-oil ratio behavior are illustrated by the curves of Figure 5, showing the typical gas-oil ratio trends under (1) gas-cap drive with good control and high degree of vertical segregation, such as may be experienced with steep dip, permeable sands, and return of gas to the crest of the structure to maintain pressure; (2) gas-cap drive with poor gravitational segregation of oil and gas such as would be typified by gas-cap expansion with poor control of gas movement, as in a flat structure or in repressuring operations, and (3) dissolved gas drive.

The curve for the gas-oil ratio under pressure maintenance with vertical segregation of fluids (Curve 1) reflects continued high oil saturation in the oil producing sands under this mechanism in that the gas-oil ratio remains at a more or less constant level during a major portion of the depletion period. Note that in the gas-cap drive with poor gravitational segregation (Curve 2) the general trend of the gas-oil ratio falls between the curves for the other two mechanisms shown. The gas-oil ratio rises steadily due to the flow of free gas to wells, but this rise may be limited by exhaustion of free gas, in which case the ratio would decline sharply after reaching a peak.

In gas-cap drive, the oil recovery expectancy is considerably greater than under dissolved-gas drive, and, under perfect conditions, it could reach a recovery of about 80 percent of oil in place. The magnitude of the oil recovery under gas displacement in practice, however, will depend on many factors, including sand and fluid characteristics, the amount of extraneous gas available, i.e., the relative volume of free-gas cap available to effectuate the displacement process, and, most important of all, the degree to which gravitational segregation of oil and gas may occur within the reservoir.

Broadly speaking, recovery will range from about 50 percent greater than for dissolved-gas drive, if gravitational segregation is ineffective and control of free gas is poor, to more than 100 percent greater (70 percent to 80 percent of oil in place) where gravitational segregation and good control are realized to a high degree.

The Mile Six field, located in Peru, is an excellent example of gas-cap drive with a high degree of gravitational segregation being permitted by the conditions of high permeability, light oil and pronounced structure. Figure 6-A shows the pressure, gas-oil ratio, and production history of this reservoir, while the idealized cross-section of the field, Figure 6-B, shows the various phases of gas-cap expansion and oil gravitation to the lower portions of the structure. In this field, the practice of gas return at the crest of the structure was initiated shortly after the field was opened to commercial production and the volume of gas returned to the sand up to 1940 amounted to 127 percent of all gas produced from the field.

Figure 6-A shows that reservoir pressure has been maintained at a level only slightly lower than the original pressure, and gas-oil ratios have been held remarkably constant. The use of effective measures of gas-oil ratio control at upstructure wells, as the gas cap approached their drainage areas, has avoided the production of material amounts of free gas and the recycling thereof in the gas return operations.

Substantially all of the oil produced in Mile Six to date has been obtained by natural flow, and at the end of 1939 the pool had produced about 90 percent of its estimated economic ultimate. Insufficient data were available to permit accurate estimation of oil in place, but oil recovery from the sand invaded by the gas cap has apparently been quite high. This is indicated by the fact that gas produced during tests of wells taken over by the cap is practically free of oil, showing that gravitational segregation and gas displacement had reduced residual oil content in the sand to a low value.

Other pressure-maintenance projects with conditions approaching or equaling those of Mile Six have shown essentially the same characteristics. On the other hand, in gas-return projects in which the relative tightness of the sand or the lack of structure act to reduce the effectiveness of the gas-displacement mechanism, largely because gravitational segregation of the fluids is not feasible to a high degree, both gas-oil ratio and pressure behavior indicate that the reservoirs are experiencing a high measure of horizontal gas drive without segregation. The oil recovery efficiency in such cases, while higher than would have been obtained under simple dissolved-gas drive, will be lower than obtainable in such fields as Mile Six.

American and British Leadership Needed in World Oil Policy

Acute and growing need for petroleum basis for long range plan by Standard Oil Company (New Jersey); nations should write laws fair to development by own and other peoples

THE world suffers today from the lack of an enlightened, comprehensive policy with respect to the earth's resources of oil. We are confronted with an acute and growing need for oil; not alone for military activity in war but for economic and social advances in peace. The oil fields of the United States, which have supplied more than 60 percent of the world's oil in the past, cannot be relied upon to maintain this record in the future. Our own peacetime demand already approaches, if it does not even exceed, our capacity to produce oil, efficiently.

But the rest of the world needs oil as badly as we do. Most of the Latin-American nations need more oil; China needs oil; India needs oil. Everybody's need is immediate. The world's merchant marine floats on oil. The wheels of modern industry everywhere are turned by oil. Standards of living can rise only as they are supported by cheap transportation—"the greatest economic and social revolution which has ever taken place"—and today cheap transportation exists only on a basis of cheap oil.

Our own high living standards, higher than any other people ever enjoyed, rest upon a productive capacity only possible because of our unrivaled system of motor transportation. Our motors are driven by oil, so cheap, so abundant as to be within reach of practically every family unit in the nation. If the world's standard of living, along with its per capita oil consumption, were lifted only half way to the levels of our own, the world's proved oil reserves would be exhausted within a decade.

The development of adequate sources of supply of oil for the world is an indispensable preliminary to the establishment of high standards of living over the world. Once developed, the oil resources of the earth can be made the foundation upon which to erect high standards of living in other nations, just as our own oil resources have been made the basis of our own high living standard.

The responsibility for devising and establishing an enlightened world oil policy rests on the United Nations. The fourth principle of the Atlantic Charter recognizes this responsibility:

> to "further the enjoyment by all states, great or small, victor or vanquished, of access on equal terms, to the trade and to the raw materials of the world which are needed for their common prosperity."

No raw material is more important in this connection than oil and among the United Nations, Great Britain and the United States, the outstanding oil-finding and oil-producing peoples, must assume the leadership in establishing wise policy with respect to this raw material.

From our accumulated knowledge of the earth we have come to realize that oil is abundant beneath its surface. We are convinced that there is plenty of oil in the earth to meet our needs for a long time to come if only we fully explore and develop our hidden resources. Yet our proved reserves of oil are small in proportion to the probable demand of a world permanently at peace. Among first-rank nations, only Russia possesses oil resources which, even before they are explored and developed, appear to make her self-contained as to oil, over the long future.

Imperial Russia was an exporter of oil, but since the revolution Russian oil has been almost entirely consumed in the internal economy of the nation. It seems reasonable to expect a continuance of this policy and to believe that Russian oil resources, large as they appear to be, will not be made available to the rest of the world.

Excluding the United States and Russia, the principal proved reserves of oil are concentrated in three principal regions; the Near East, the environs of the great basin occupied by the Gulf of Mexico and the Caribbean Sea and the larger islands of the East Indies group in the Far East, named in order of their importance. The pre-war world consumption approached two billion barrels annually. The needs of a post-war world will depend on what happens to the living standards of other nations; if the average level rises substantially, the world demand for oil must be multiplied several times.

The principles of conservation require that the annual withdrawals of oil from the typical oil field be restricted to a small fraction of the total original volume of recoverable oil in the field. For the average oil field the annual withdrawals should not exceed five percent of the original volume of recoverable reserves. If oil is withdrawn too rapidly, the equilibrium between oil, gas and water in the pores of the reservoir underground is destroyed, gas escapes to the atmosphere and is wasted, water encroaches into the wells ahead of the oil and the total recovery of oil is decreased by the amount of the oil that is left behind in the sand. Yet in many oil fields the first year's withdrawals have amounted to as much as 30 percent of the total recoverable oil. Thus it is clearly possible, over brief periods, to withdraw oil from the average field many times more rapidly than the principles of conservation and efficient producing practice would dictate. We can, if we choose, supply a given demand for a time from reserves totally inadequate to meet the same demand continuously. To do so, however, we sacrifice a part of our reserve, which becomes unrecoverable. The penalties for these excesses are increased costs of production and decreased recoveries of oil.

A rate of withdrawal of 5 percent of the original recoverable reserve per year from an oil field means a 20-year producing life for that field. To supply the world demand for oil efficiently and without waste, therefore, we should have available proved reserves equal to about 20 times the annual demand. We ought then to build world reserves up at least to this level. But whenever we do so we make it possible to supply the total demand from a portion of the reserve, if we disregard conservation principles and waste, or make unrecoverable, a part of the total reserve. Whenever we build up sufficient proved reserves to supply the demand efficiently, without waste, at rates of withdrawal uni-

formly limited to the optimum, in an orderly, ratable manner, we make it possible for the unscrupulous operator, whether a single individual or a whole nation, to produce at excessive rates. If he is permitted to violate the principles of conservation he wastes the irreplaceable reserves of a natural resource. Whenever our reserves are adequate to supply our needs at efficient rates of production, we must take steps to protect them from being squandered.

In the light of these considerations it will be clear that a world oil policy should require that withdrawals of oil from the proved reserves of the earth be limited to the world demand for oil. Under no circumstances should withdrawals exceed the aggregate optimum rate for the earth's oil fields.

The situation is wholly analagous to that of the United States itself, where, under the conservation laws of the several oil-producing states and the covenants of the Interstate Oil Compact, with the approval of Congress, national demand for oil is supplied through ratable withdrawals from the oil fields of the several states, up to the optimum rate of each field as a limit.

The discovery of new oil fields is a difficult task. Many nations have failed in the attempt to develop their own oil fields. Yet most of the world remains practically unexplored as to oil.

In the search for oil and the development of the oil resources of the earth, Americans can render society at large an outstanding service. The world's oil industry is practically an American industry; its methods, its equipment and much of its personnel is American. Without a strenuous effort that utilizes efficiently American staff and methods it is doubtful if the world's oil resources can be developed fully for a long time to come.

Achievement in Democracy

Successful oil finding is an achievement in democracy; it is a tribute to the effectiveness of free enterprise such as has long characterized American industry. It is significant that in the United States, where oil resources are more completely developed than anywhere else on earth, the people of all nations have been permitted to engage freely in the search for oil.

It should go without saying that nothing in an enlightened oil policy will abridge in the slightest degree the rights of individual nations to control completely their own internal economies, in their own national interest, under the terms of their own national laws. A world oil policy will fail if it benefits one nation at the expense of another; it must serve the best interest of every nation. It must entail no obligation not voluntarily assumed and adhered to. It must contemplate no use of force.

World oil policy should stimulate search for new fields throughout the earth, to the end that the oil resources of the earth shall be developed to the point where world demand may be fully met (if possible) without resort to rates of withdrawal in excess of the optimum in any oil field. Orderly production should be adhered to uniformly in all fields of all exporting nations at rates not greater than the optimum in any field. If sufficient reserves are developed to permit production at the optimum rate, in excess of world demand, then withdrawals should be restricted pro rata in all oil fields to a rate less than the optimum.

In a free international economy the distribution of exportable surpluses to consuming nations will respond flexibly to demand. The exporting nation will determine for herself in every case the volume of her exportable surplus, having first provided for her internal demand.

Free Enterprise

World oil policy should foster private enterprise among the citizens of all nations who wish to engage in the world's oil industry. Every nation must write its own laws and prescribe for itself the conditions under which private citizens, whether foreign or native, can participate in the development of that nation's oil resources. Subject to these regulations, however, active participation by all nationals, in a climate of free enterprise, is greatly to be desired. No other method of developing oil resources will be found to be as effective.

Among the principal barriers that obstruct the path to an enlightened world oil policy are the state monopolies by which some nations reserve to a government agency all activities relating to oil, denying to private citizens any part in the oil industry. Uniformly, state monopolies have delayed or prevented the full development of oil resources. The same hampering effect results from the laws by which some nations discriminate against the citizens of other nations in granting rights to explore or develop oil resources within the boundaries of the nation in question, her colonies or mandates.

Import duties on oil or oil products handicap the internal economy of any nation which is not self-sufficient in oil. Heavy special taxes on oil products make impossible their wide use and deny the benefits of cheap fuel to the common man, thus forcing him to lower his living standards. Distribution controls, either by the state or the industry, which establish production quotas or market quotas, and fix prices at high levels, are destructive of both free enterprise and high living standards.

All these practices are contrary to an enlightened policy for the development of the world's oil resources. They are usually part of the internal economy of the nation in which they prevail and in such cases they can only be eliminated through the action of that particular nation. But they are subjects for general concern and should be discouraged.

Our own government can contribute to the formulation and establishment of an enlightened world policy for oil by assuming leadership, in concert with Great Britain, in devising an acceptable policy and in persuading other nations to agree and to adhere to its provisions.

Our government can also lend active diplomatic support to American citizens and other nationals who seek, through legitimate methods, to negotiate, explore and develop oil concessions throughout the world, to produce and distribute oil and oil products, in free enterprise.

The assurances which American citizens have usually sought from a foreign government in undertaking the development of oil resources under a concession from that government are:

1—security of title to the property or rights acquired;
2—managerial control of their own operations; and
3—the opportunity to make a reasonable profit from the enterprise.

Given these assurances, concession contracts may take a variety of forms; they may provide a straight royalty to the government; they may share profits with the government; or they may become "mixed company" operations with the government. Local capital may be admitted to the enterprise if it desires to participate.

The foreign government which lets oil concessions to private individuals or companies will properly insist:

1—that an adequate participation in the proceeds from the enterprise come to the government;
2—that operations shall be so conducted as to contribute to the domestic economy of the nation;
3—that domestic demands for oil be fully satisfied at low prices before any oil is exported;
4—that development and production proceed in an orderly manner with no avoidable waste of the natural resource;
5—that the enterprise give to local citizens the maximum of training and employment at fair rates of compensation; and
6—that oil and oil products available for export move to market in fair volume at fair prices.

■ CONTINUED ON PAGE 26

Electrolytic Corrosion in Production Prevented by Insulated Flanges

Pipe-line companies have made progress in combating this type of damage and well operators could easily follow suit and save considerable tubular goods by application of inexpensive device

By JOE L. WARD, JR., Engineer

DURING recent years the widespread occurrence of electrolytic corrosion of tubular goods has become more and more recognized by pipe-line companies, and considerable progress has been made on their part in diagnosing and combating the various conditions encountered. That the same situation obtains in production operations has not been so fully recognized, and as a consequence the industry is spending thousands of dollars every year repairing failures in both surface and subsurface equipment directly attributable to electrolysis, which could be eliminated or at least minimized by taking the necessary steps to break up the usually small but insidious electric currents that can be found flowing throughout most field gathering systems—between the tank battery and the connected wells.

Although the theory has been advanced that all corrosion is fundamentally electrolytic, the type of corrosion considered here is that due to long-line electric currents and found in both surface and subsurface equipment, and which is characterized by pitting and localized decomposition. It is caused by a flow of electricity through a flow line, a string of rods, or through the ball and seat of an oil-well pump, as the case may be. Trouble occurs at the point where the current leaves the metal and flows into the adjacent salt water or damp soil; at each point at which the current departs from the metal approximately 20 pounds of iron (different amounts for different metals depending on the electrochemical equivalent of the particular metal) are dissipated each year for each ampere of current flowing. Hence it can be seen that a current of apparently inconsequential magnitude of the order of a minute fraction of an ampere is sufficient in a short period to eat a hole in casing far below the surface, part a string of sucker rods, or badly pit a standing valve ball and seat. And all of these actions could easily be occurring simultaneously at the result of the same small current jumping from the casing to the tubing to the sucker rods as it cavorted down the hole.

Although the action on subsurface equipment is nearly always in the nature of pitting or eating through at the various points where the current leaves the pipe, a condition that sometimes occurs in surface equipment is what appears to be common localized rusting due to oxidation; actually it is caused by the reaction of the metal surface with acids or free chlorine evolved by the electrolysis of the chlorides of postassium, sodium, or magnesium contained in damp soils in contact with the metal, which occurs when the current leaves the pipe and flows through the soil. The intensity of this action depends on the nature and dampness of the soil, and in many areas the life of surface gathering lines, etc., is limited to three or four years, at the end of which time it has been necessary to replace entire sections of the installation.

The question arises as to what is the source of these currents. The original source is usually such as ground leakage from generating plants, electric railways, etc., or induced direct and frequently pulsating currents from nearby a. c. transmission lines. The immediate source to the equipment, however, is almost invariably a long distance oil or gas pipe line, and the usual course of the current is from the pipe line through the stock tanks to the separator, out the flow line, down the well through an unpredictable path, and finally out into a subsurface formation.

Another possible but relatively infrequent occurence is the generation of a current by galvanic action between two formations in which two wells serve as the poles of a gigantic battery, the flow lines as the circuit, and the resulting current flows out of one well into the other. This is particularly to be expected in connection with twin wells, such as, for example, in the Hasting field. A similar and irremedial condition occurs within a single well in which a current may flow from one formation through the casing out into another formation. It also occurs between two different soils in surface systems.

The magnitude of flow line currents entering a well are usually less than one half of one ampere, although currents up to four amperes are not uncommon. Frequently a flow of several amperes is found coming in off a pipe line, but by the time it is divided among various tank batteries and between the several flow lines of each tank battery the resulting currents found flowing into the individual wells are small.

Although the amount of current flow is of considerable help and interest to the investigator, it is primarily necessary to know only its direction to effectively deal with the problem in production operation. This does not, of course, apply to the cathodic-protection methods employed in the pipe-line industry, wherein the magnitude of the current must be ascertained as well as its direction. The direction of current flow is determined by noting the direction of the voltage drop between two points on the flow line with a highly sensitive voltmeter. If it is desired to also determine the amperage, the voltage drop of a specific length of the line sufficient to give an appreciable reading on the instrument should be taken, and the current can then be calculated by Ohms law, the resistance of the length of pipe being determined by its size and weight. The approximate resistance of 2⅜-inch O. D. 3.75-pound line pipe is .0058 ohm per 100 feet and that for 2⅞-inch O. D. 5.90-pound line pipe is .0037 ohm per 100 feet.

So far nothing has been said concerning the method of prevention of electrolytic corrosion. The method lies, of course, in the elimination of the

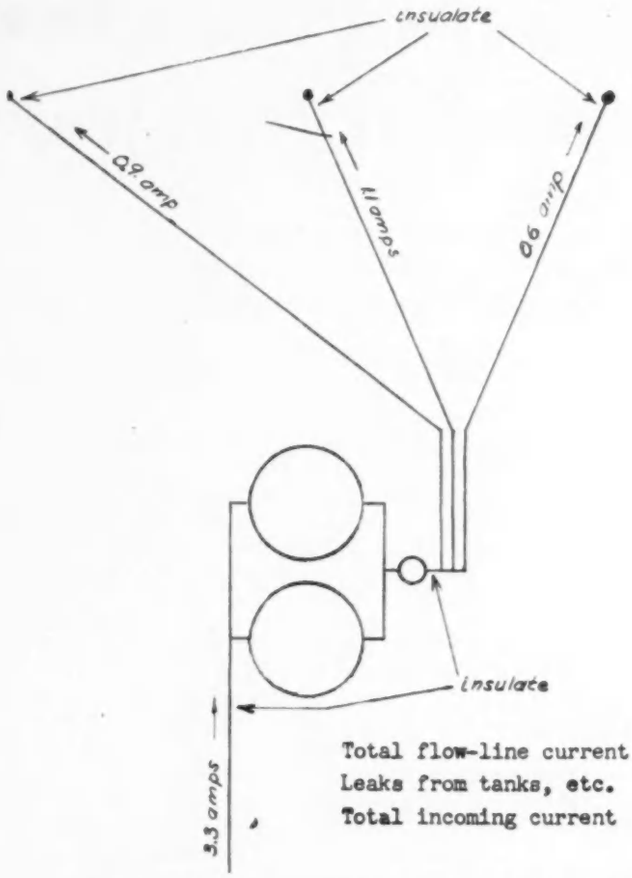


Illustration of distribution of incoming electric current from pipe line through lease gathering system.

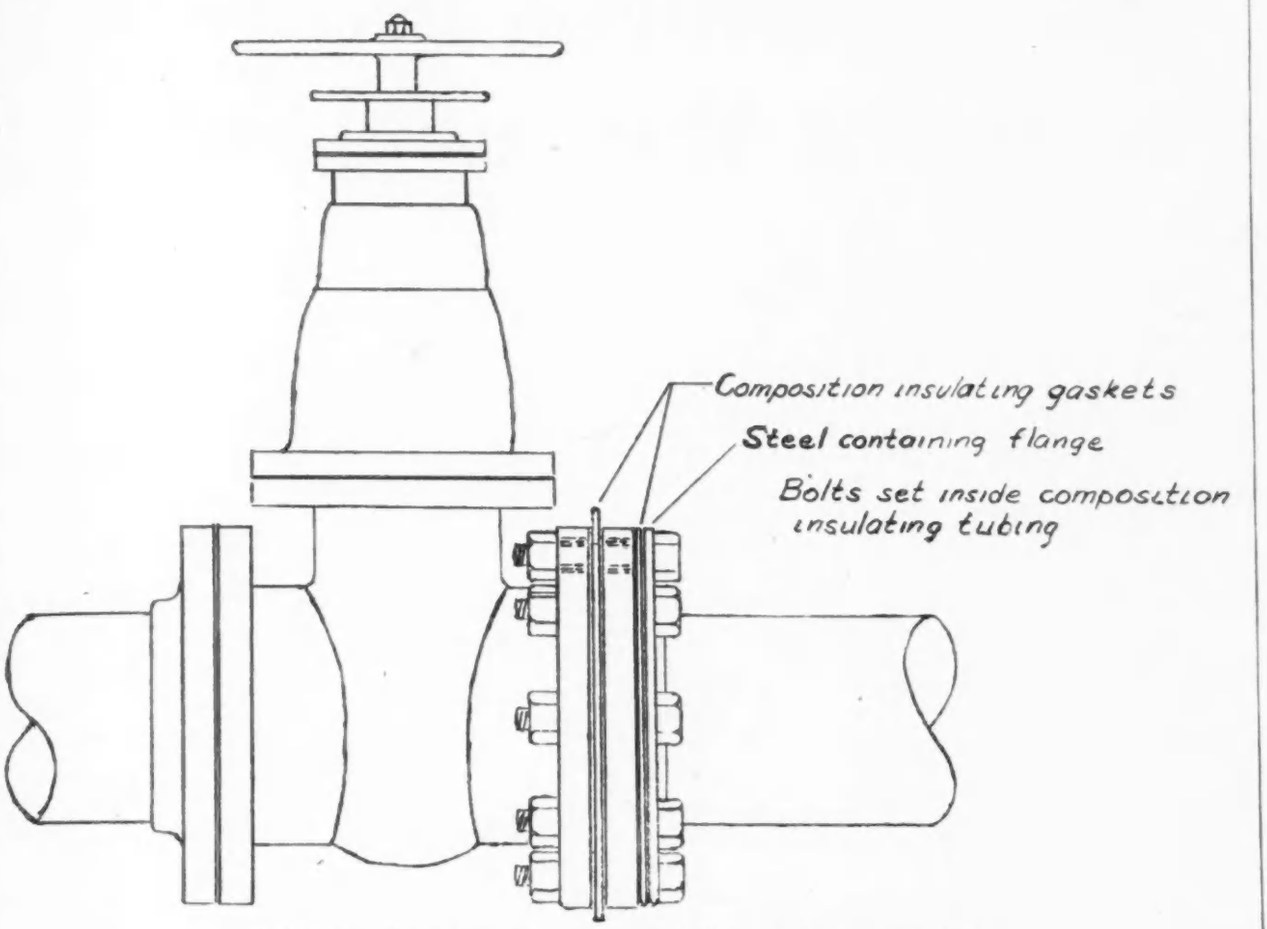
electric currents causing the corrosion. This is done by insulating the system from the source of the currents by the use of an insulated flange connection, the cost of which is absolutely nominal considering the savings effected. Of primary importance is to insulate at the absolute source (to the operator's equipment) of the current, and there may be more than one source. If this is not done the current, which had formerly been dissipated over an extensive system with a relatively minor effect, would then be grounded over that part of the installation between the insulated point and the source. For example, if the origin of the current is found to be at the pipe-line connection at the tank battery and an insulated flange is installed at the separator manifold, the entire current would in all probability then be discharged through the tank bottoms with serious and rapid consequences thereto.

It is particularly important to also insulate at the well head, for repairs to damage done to subsurface equipment is always expensive, and in many instances damage to the producing string of casing has been irreparable. Should a well prove to be a source of current it is possible that it would be wise to provide an outlet for the current by grounding the flow line on the well side of the insulated flange, the theory being that if such a ground is not provided the current will leave the well at some subsurface point rather than being eliminated by the flange. However, the efficacy of this practice is purely conjectural as if, on the other hand, the current is permitted to flow the longer course to the well head, its magnified effect due to continued departure and reëntry into the pipe as it travels up the hole might be of more serious consequence.

Any standard flange can be used for making an insulated connection by incorporating therein insulating flange and bolt gaskets. A flange gasket is inserted between the two companion flanges and the bolts are then insulated by placing them inside thin-walled plastic tubing with a gasket between the bolt head and the flange. Reasonable care must be taken in assembling the flange to insure a fluid-tight connection to prevent current leakage. It is also desirable not to use the insulated flange in the capacity of a union and a separate flange or union should be provided for this purpose. The cost of the insulating materials is approximately $1.00 per nominal inch of flange size.

The effect of salt water flowing inside the pipe on the insulating ability of the flange has been questioned. It is logical to assume that the current would jump around the flange through the salt water, which is of course an excellent conductor, and in some instances perhaps it does. However, numerous checks have been made on flanges installed in flow lines of wells producing large percentages of water, and in at least one instance a survey was made of a flange installed in a flow line into a salt-water-disposal well, and in every case the flanges were found to be almost 100 percent effective.

An illustrative example of the occurrence of electrolytic corrosion in a subsurface installation is a well in the Conroe field in which 1¼-inch tubing was recently pulled after having been used as a flow string inside of 2½-inch tubing for approximately two years, the pipe having been new at the time of installation. The inside of the pipe was found to be severely corroded adjacent to the couplings, so much so that it came in two at several points during the pulling job. The well had been producing a considerable percentage of water, but the fact that the 2½-inch tubing, which had been in the well some eight years and was also pulled, was absolutely untouched discounted the possibility of corrosion from that source. The possibility of galvanic action between the two very slightly dissimilar metals comprising the tubing and couplings was dismissed because the magnitude of the resulting current, if any, would have been inconsequential. It appeared to be most probable that the corrosion was eletrolytic and due to a long-line current brought into the well through the flow line. A survey was taken at the well head after the well was put back on production and a current of 436 milliamps was found flowing into the well, which was more than ample to account for the damage done. At this point it is interesting to consider that if the same current had been flowing into this well for the entire previous eight years, a minimum of approximately 70 pounds of steel had been removed from the tubular equipment, enough to completely eat away a 3-foot section of the producing string of casing or an 11-foot section of the 2½-inch tubing. A check of the other wells flowing into the same tank battery revealed that a similar situation existed in each, the size of the currents ranging from 0.4 to 0.6



Method of insulating flanged connection on pipe line valve to lease stock tank.

ampere. It was found that practically all of the current was flowing into the tank battery from the oil pipe line and a field gas system linking the separator to a natural-gasoline plant, and the situation was effectively remedied by insulating at the two points of current entry and at the various well heads. A subsequent check showed the flow of current to have been eliminated throughout the system.

Another interesting example is a well in the Manvel field in which pulling jobs were frequently necessary over a long period to correct tubing leaks and in which repeated replacements of sizable portions of the tubing string were necessary. A survey indicated that 2.2 amps of current were flowing into the well from the flow line, and at the same time 1 amp was also found going into an adjacent well. In this instance, the pipe again proved to be the source of current.

If there exists the possibility of the generation of local currents within the system itself by galvanic action between subsurface soils or leaks from generating plants or adjacent power lines and the soil with which the pipe is in contact is corrosive as previously described, without doubt it is economically desirable to insulate the lines by painting with asphalt and wrapping with a prepared covering. As a matter of fact, many operators have found it to be good economic practice to so insulate at the time of purchase all line pipe used in lease operations in certain corrosive areas and particularly in the Gulf Coast.

In conclusion it is desired to emphasize the universality of the occurrence of electrolytic corrosion in field gathering systems and subsurface well installations due to long-line currents coming in from what is usually an external source. The damage to subsurface equipment is particularly serious because of the extremely high cost of repairs, which frequently involves workover operations and occasionally results in the loss of the well. The corrosion occurs at the point at which the current leaves the metal, a continuous flow of 1 ampere for a period of one year will dissipate approximately 20 pounds of iron at each point at which it departs from the metal, and if in flowing down a well the current jumps back and forth between two or more strings of pipe its corrosive effect will be considerably magnified.

The detection of and remedy for this condition is simple and inexpensive. The remedy is accomplished by the insertion of insulated flanges at the source of the current and at various points throughout the system after a survey has been made to determine the magnitude and direction of the currents. Material for insulating any standard flange is readily obtainable at a cost of approximately $1.00 per nominal inch of flange size.

It is believed that the prevalence of electrolytic corrosion due to long-line currents is so extensive and its cost to the operator so great that, in view of the inexpensiveness of the remedial installation, in addition to insulating existing sources of trouble serious consideration should be given to incorporating insulated flanges into new tank-battery and flow-line installation standard hook-ups.

Deeper Drilling Prospects In the Mid-Continent

By A. R. DENISON, Chief Geologist,
Amerada Petroleum Corporation, and President of the
American Association of Petroleum Geologists

A VERTICAL mile to two miles of untested but prospective formation remains within reach of the drill. In no case would a well deeper than 15,000 feet be required, and in most cases to no greater than 10,000 feet.

This paper was presented before May, 1943, meeting of Petroleum Division of American Institute of Mining and Metallurgical Engineers at Dallas, and is reprinted with permission from the November, 1943, issue of the Institute's publication, *Petroleum Technology*.

NEW fields discovered during 1942 equalled or exceeded the number in any preceding year. The total amount of oil found by these discoveries was less than in any previous year for which accurate records are available. This means that the pools now being discovered are much smaller than in past years. This is to be expected, since the prospects available during 1942 were largely those overlooked in the earlier years and therefore represent a second or third order (in quality) of structural feature. This failure to find pools of good size and quality raises grave doubt as to the security of our future oil supply. With military needs rising almost daily, and the period of heaviest consumption in our war effort still in the future, there is even a growing doubt as to our ability to supply the amount needed for our ultimate victory. This does not mean that our reserves are inadequate, but rather that our "capacity to produce" may be inadequate. Lacking large fields with flush production, our capacity to produce is rapidly approaching our current needs. Since the industry is unable to find the large new fields necessary to keep a safe margin of "capacity to produce," other means are needed. It seems obvious that one of these should be deeper prospecting on the large, proven, productive structural features now known.

The exploratory wildcat is drilled primarily in search of a trap and the reason for failure to find oil and gas in nine out of ten cases is due to the absence of a suitable trap under the drill site. Therefore, deeper drilling on a known structural feature that is productive largely eliminates the greatest hazard in wildcat drilling. While by no means all the oil known today is found in structural traps —in fact, some have estimated that less than half is so located—the fact remains

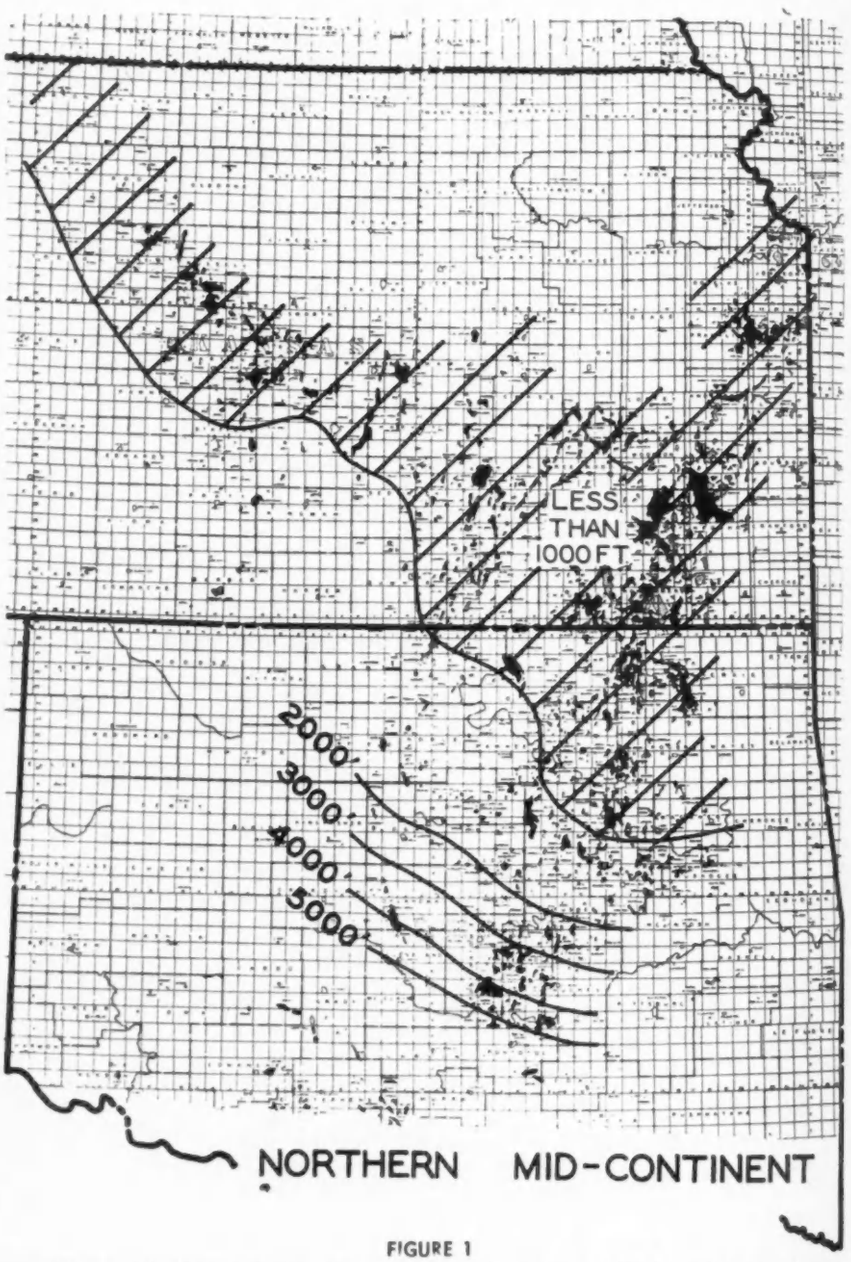


FIGURE 1
Thickness of sediments between the now generally prospected levels and the granite or basement rocks in the northern Mid-Continent.

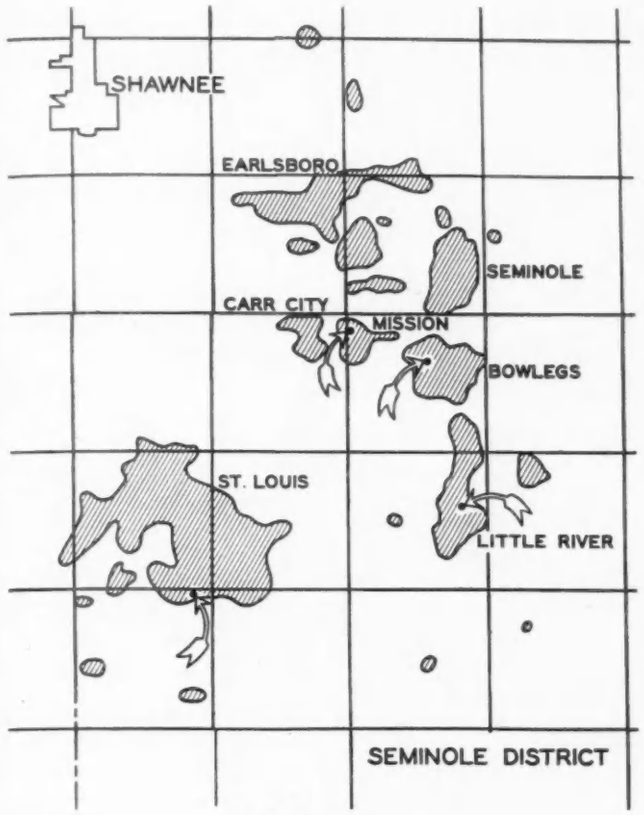


FIGURE 2

Areas producing from structural traps and the "deep" dry holes in the Seminole district.

that structural traps are far more commonly the oil fields that have multiple horizons of production superimposed one over the other. Outstanding examples are the Eldorado field in Kansas, the Tonkawa and Cushing fields in Oklahoma, the Louden and Salem pools of Illinois, and the richest and most prolific of all structural traps, the Long Beach, Ventura and other similar fields of California.

It is common in many lines of effort to overlook that which is known and near to us, in our search for that which is unknown and distant. Our productive oil fields are "known and near" and it is very easy to dismiss them with the broad generalization that they have been tested. This is true only if reliance is placed in the antiquated assumption that any given sedimentary horizon marks the end of possible oil accumulation. For many years in the early history of prospecting for oil in Oklahoma the top of the Mississippi lime was considered the "farewell" horizon. This idea was eliminated by the discovery of oil in the "Wilcox" sand of Ordovician age. Other similar examples that limited prospecting could be recited for nearly every oil province.

It is assumed in this discussion that no structural trap is condemned for deeper production until all sedimentary beds above granite or other basement rocks are thoroughly prospected. There are, of course, limitations on the depth to which prospecting can go with the present design of drilling equipment, but one well has drilled below 15,000 feet and several others have closely approached this figure. It is, then, perhaps not unreasonable to say that any known structural feature can be prospected to 15,000 feet with the present equipment. On the following pages an examination is made of a few selected areas in the Mid-Continent to see what thickness of sediments remain between the now generally prospected levels and the basement rocks, or 15,000 feet, whichever is the shallower. In general, it will be shown that there remains not a few hundred feet but in most places more than a mile in thickness and in some more than two vertical miles of additional sedimentary beds awaiting the drill.

Northern Mid-Continent

Figure 1 shows the principal producing areas of Oklahoma and Kansas. The crosshatched area has in general less than 1000 feet of sedimentary beds below present prospected horizon. This includes nearly all the productive areas of Kansas as well as the northern part of Oklahoma. In this vast area are many fine structural traps, and no doubt many of them will have deeper production; but, since the total selection to be drilled

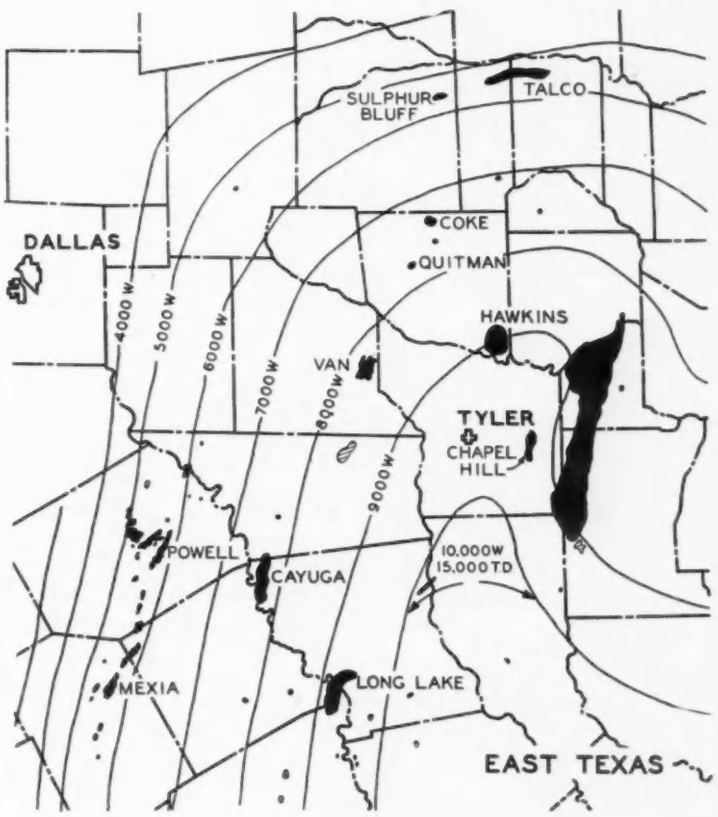
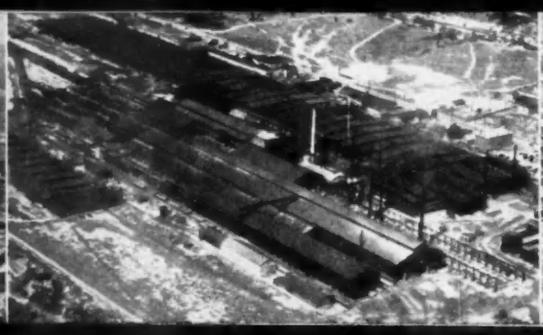


FIGURE 3

Thickness of sediments between the Woodbine sand and (1) basement rocks, (2) the Smackover limestone, (3) 15,000 feet, whichever is shallower.



NATIONAL OIL FIELD MACHINERY A

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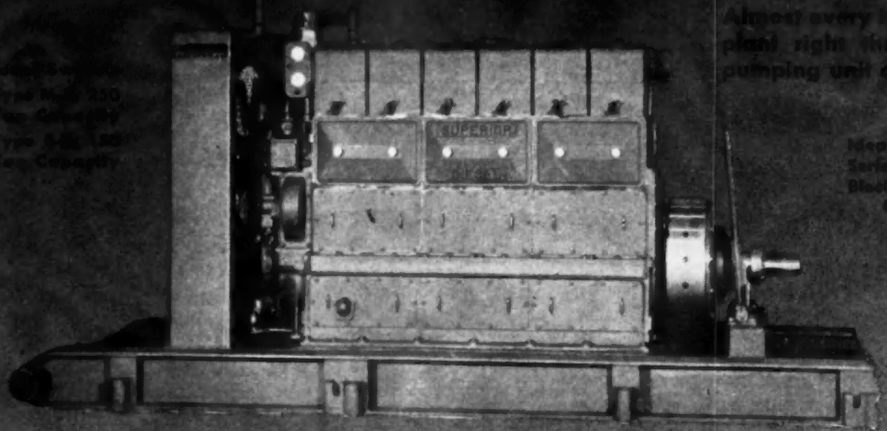

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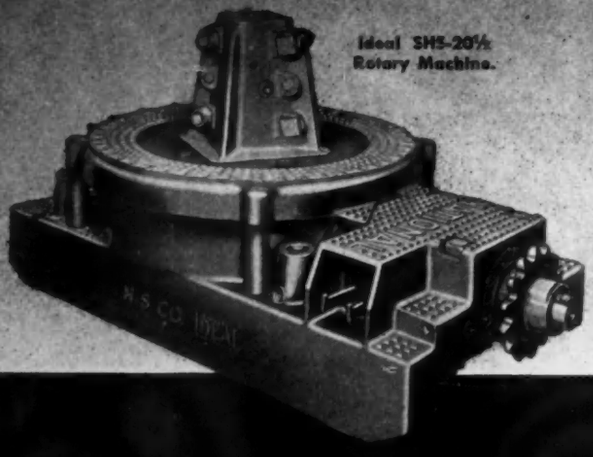

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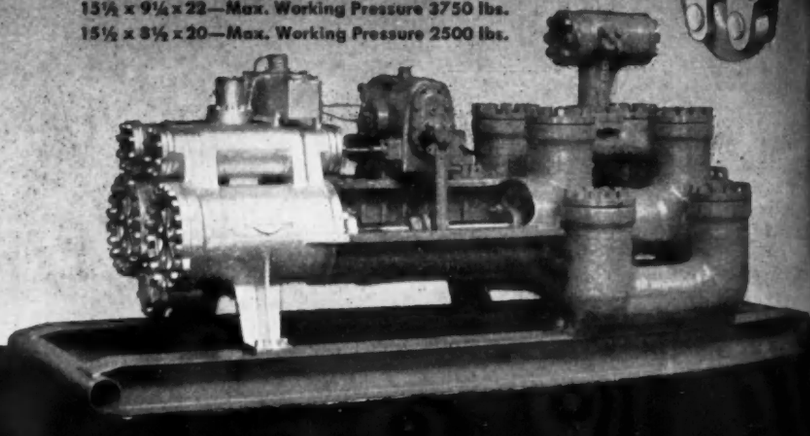

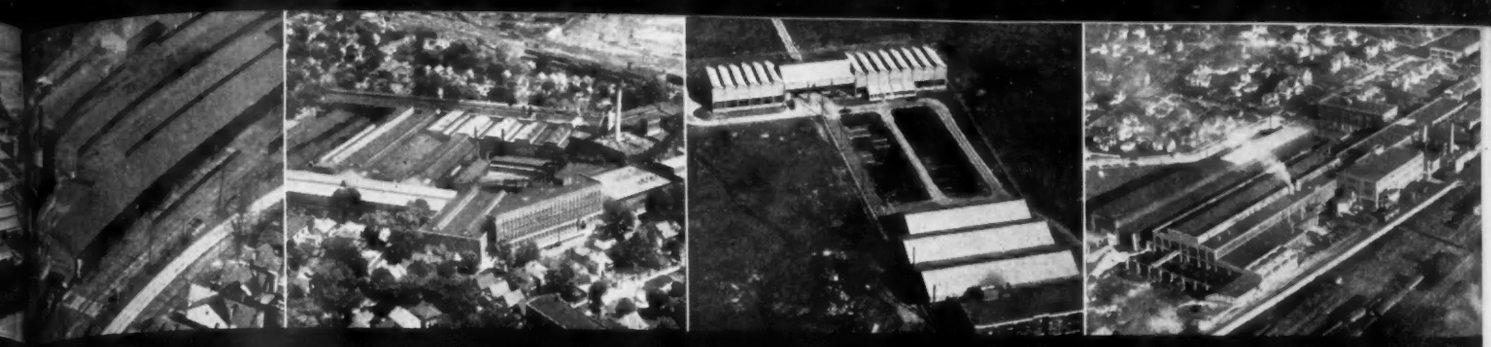

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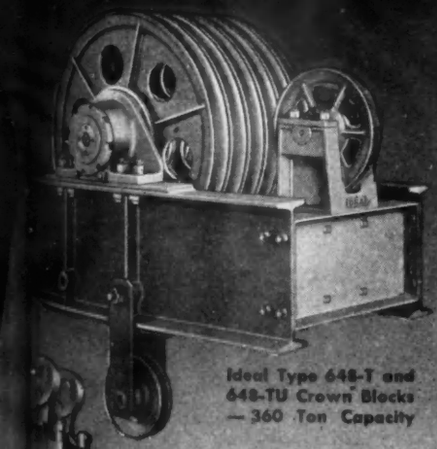

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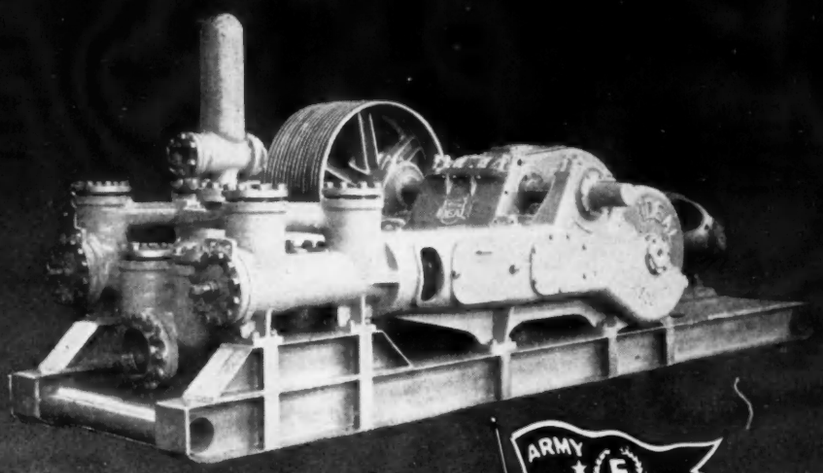

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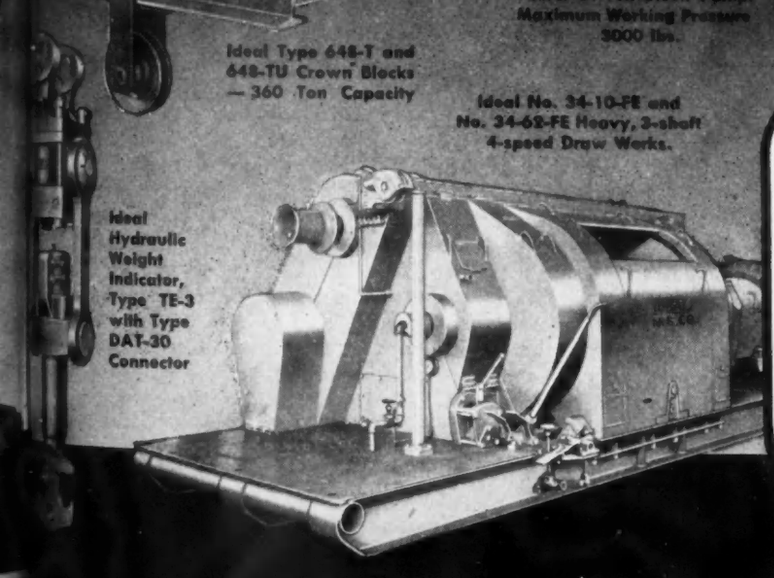

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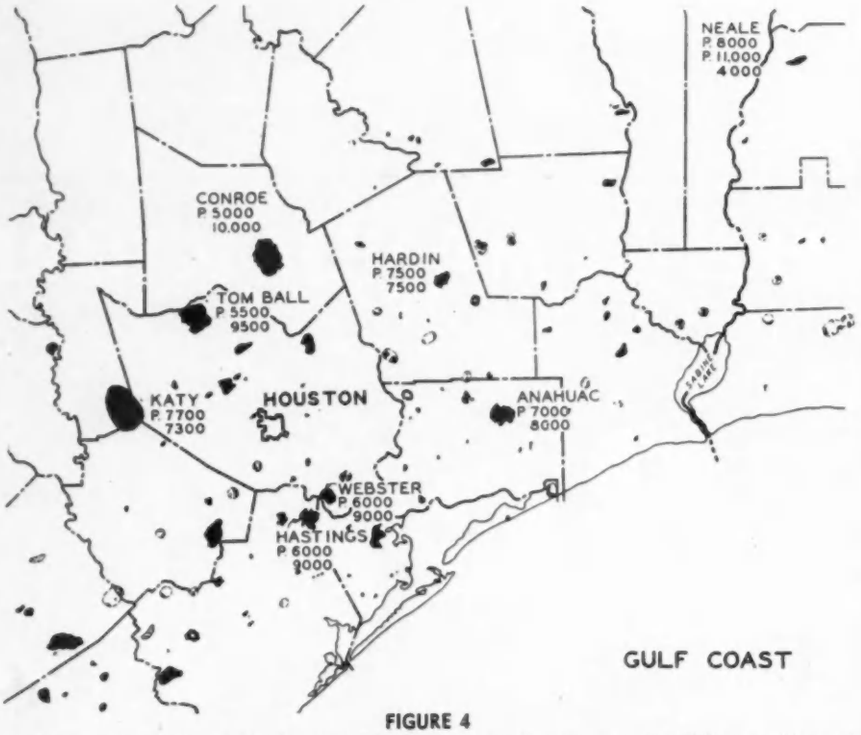

FIGURE 4

For a part of the Texas Gulf Coast, depth of present productive zone (P. 7700) and thickness of sediments remaining untested above 15,000 feet.

is very small, they cannot be said to have the chances of additional oil that is present in areas where the beds are many times as thick.

Seminole District, Oklahoma

South of this area of thin sediments, there is a progressive increase in thickness, so that under the Seminole plateau there are 4000 to 5000 feet between the generally prospected level — the "Wilcox" sand — and the basement rocks. Figure 2 shows the pools in the Seminole district that produce oil from purely structural traps. These fields, in the aggregate, cover more than 70 square miles and have produced approximately three fourths of a billion barrels of oil.

The four wells shown on Figure 2 are the only tests anywhere on these structures that were drilled below the "Wilcox" producing horizon. Their total depths are 4478, 5080, 5181 and 6203 feet, which is 468, 760, 1541 and 1890 feet, respectively, below the producing horizon. The two deepest tests are "edge wells" in their respective fields and too low to produce in the regular pay. With more than 2500 feet of sediment remaining above granite below the deepest of these wells, and more than 4000 feet below the shallowest, it is obvious that they are not adequate tests of these structures.

Since the "Wilcox" sand is at an average depth of 4000 feet in the Seminole district, and there is estimated to be 4000 feet or more of sedimentary rocks between this depth and granite, there remains as great a thickness of sediments, or more, to be drilled than has heretofore been prospected. It would not require a well much deeper than 8000 feet to prospect the entire sedimentary section below present producing horizons.

East Texas Basin

In the East Texas basin, the broad structure is of such a regular nature that contour lines can be drawn to indicate the depths remaining to be prospected below the present producing horizons (Figure 3). The numbers shown on the contours give thickness of sedimentary rocks between the Woodbine sand and (1) basement rocks, (2) and Smackover lime or (3) 15,000 feet, whichever is the shallowest. A number of fields in East Texas are producing in the Paluxy formation, and there is oil and gas-distillate production in the Glen Rose and Travis Peak, all lying below the Woodbine, but the first of these is less than 1500 feet below the Woodbine and the Travis Peak is not more than 4000 feet.

The contour lines show ranges in thickness from 4000 at the western border to 10,000 feet in the bottom of the basin. This deeper figure is where the Woodbine is 5000 feet deep and thus indicates a total drilling depth of 15,000 feet. Under such outstanding structures as Van and Hawkins, there are from 8000 to 9000 feet of untested sediments below the present Woodbine productive horizon. Under the newer Paluxy producing fields of Coke and Quitman, there are 6000 feet or more of sediments, and at Chapel Hill, with a productive horizon at 8000 feet, there are at least 5000 feet of sedimentary beds above the basement *and* above 13,000 feet. The fact that Woodbine structures have four or more and the Paluxy three or more known productive horizons within drilling range would appear to make such deeper drilling particularly attractive.

Texas Gulf Coast

The Houston district of the Texas Gulf Coast is an area that has many outstanding oil-producing structural traps and a sedimentary column of rocks under these structures, which extends to or beyond 15,000 feet. The limits of deeper drilling, then, are there fully controlled by the capacity of the present drilling equipment. On Figure 4 the present depth and the feet remaining to prospect are shown alongside such outstanding structures as Tomball, Conroe, Katy, Hastings, Webster, Anahuac and Hardin. The sediments still untested, and within reach of the drill, vary from 10,000 feet at Conroe to 7300 feet at Katy. Thus, from 1½ to 2 vertical miles of section remain to be prospected. That such drilling may "pay off" in an important way is illustrated by the Neale field, in Beauregard Parish, Louisiana. There the discovery sand was at 8000 feet but a more prolific sand was uncovered 3000 feet deeper. Below this deeper sand there remains more than 4000 feet of sediments within reach of the drill.

The Permian Basin (West Texas-New Mexico)

The Permian Basin of West Texas and New Mexico for several years following discovery of oil, produced only from the upper part of the Permian at depths ranging from 800 to 5000 feet. Ellenburger production at 8600 feet was found at Big Lake underneath structure producing in Permian beds at 3000 feet in 1928, but the importance of deeper drilling on proved structure, was overshadowed by the numerous prolific discoveries from the Permian. Production from Simpson and Ellenburger was discovered at the moderate depths of 5000 to 6000 feet where the Permian was missing or barren in several fields between 1928 and 1940. At the beginning of the latter year, a trend of deeper drilling was inaugurated both for wildcat and pool wells. Some results have been deeper Permian pay at Wasson, the Embar pool of Andrews County, the Barnhart pool of Reagan County and the Monahans pool, Ward County.

Returning, however, to the type of prospecting proved at Big Lake many years ago has led in 1943 to the discovery of the Ellenburger production at 9200 feet at Keystone, a structure producing from the Permian at 3600 feet, and another Ellenburger discovery at 10,450 feet in the Walton structure, pro-

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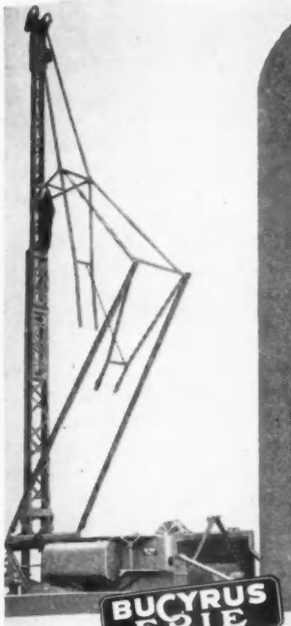
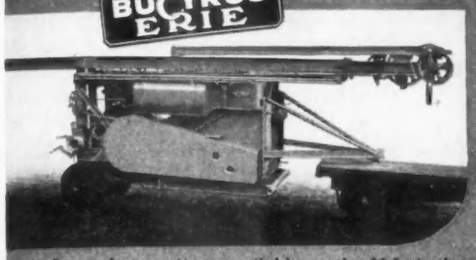
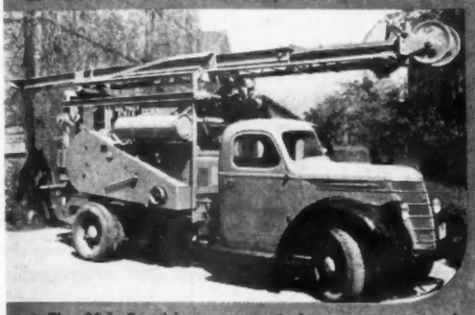


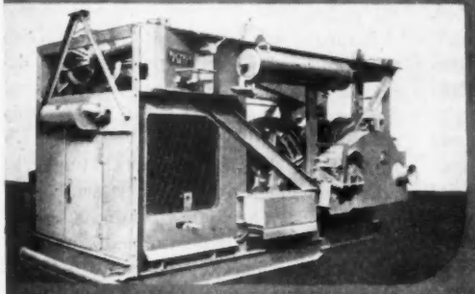
• The entire derrick set up on the 36-L can be handled by two men in 20 minutes. The derrick on this machine is a strong latticed box structure of the telescoping type, extended and raised by a worm-gear-driven power winch.



• A speedy mounting, available on the 36-L, is the semi-trailer outfit, with which the rig can easily be moved at 25 to 30 miles per hour.



• The 24-L Spudder — mounted on a motor truck — is built for covering a large territory at maximum speed.



• The 36-L's skid-type base is easy to skid on or off trucks, derrick floors, or mudboats.

With Bucyrus-Erie Spudders, mobility means more than mere "movableness;" it means really fast tear downs, speedy moves, and quick set-ups on new locations — for all three can be done in an eight-hour shift with as few as two or three men.

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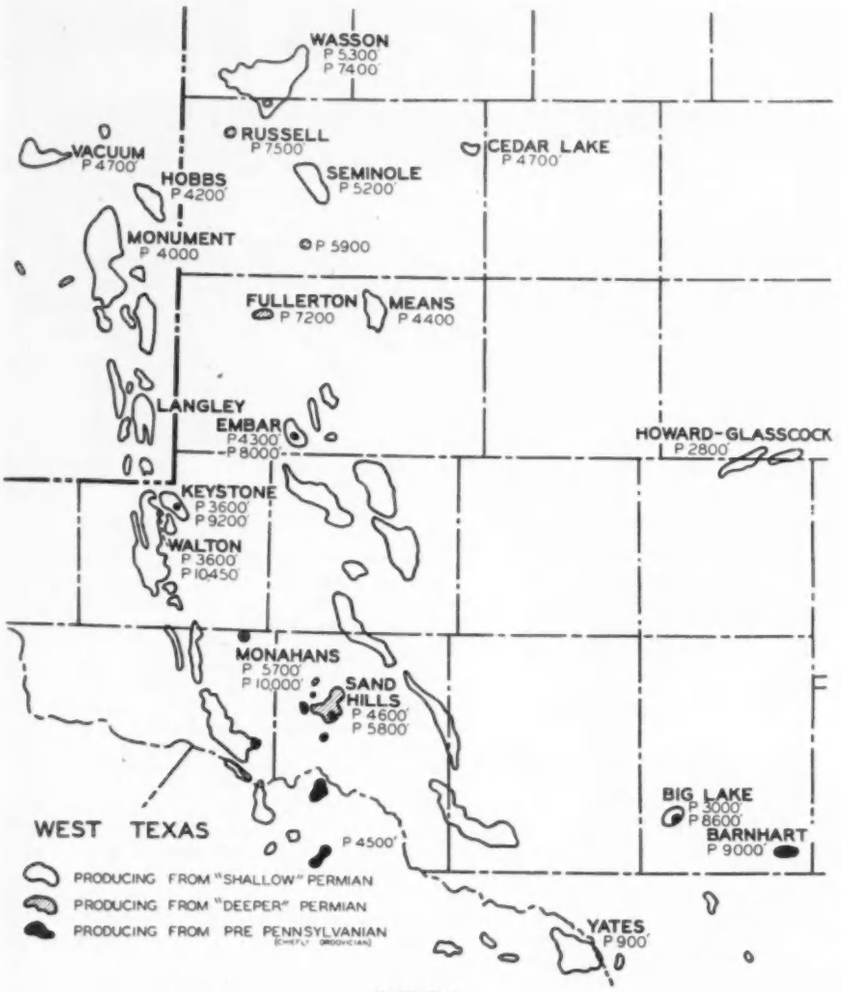


FIGURE 5
Productive areas in several horizons and depth to present prospected producing levels in several outstanding structural traps.

ducing from the Permian at 3600 feet. At both of these places more than a vertical mile of new drilling was required to reach the new productive horizon.

Outstanding structural traps such as Vacuum, Hobbs, Monument, Seminole, Means and Goldsmith have never had a test below the upper Permian. Present productive depths in these fields range from 4000 to 5200 feet, and there is ample evidence to show that a vertical mile or more of sediments remains untested under these fields. The Wasson field, producing from 5300 and 7400 feet, covers more than 70 square miles and has only one test that went as deep as 10,000 feet. Numerous other productive traps having less pronounced structure likewise offer good promise for deeper prospecting. There are then in Permian Basin hundreds of square miles of proved structural traps that have a vertical mile or more of sediments beneath them, which are within reach of a well drilled to 10,000 feet.

Summary

In this brief examination of a few areas in the Mid-Continent, it has been shown that there is a vertical mile or more of sediments underlying in the aggregate many hundreds of square miles of structural traps. Thus, literally hundreds of cubic miles of sediments on our choicest structural features await the drill. In many places the amount of such sediments remaining is much greater than the amount already exploited. There is no need for geological or geophysical effort since structural control is available from the wells drilled thus far. A great many of them will require a well to less than 10,000 feet and none over 15,000 feet. They all have the great advantage, in these times of material shortages, of having pipe-line and transportation facilities already available. In many places it would require little additional manpower to produce the oil thus found. Thus we have ready-made geology, depths within reach of the drill, and pipe lines and markets waiting.

With several factors in its favor, it appears that the quickest and most certain methods of alleviating the present danger of a shortage of "capacity to produce" is deeper drilling on our known, proven, productive, structural traps.

Leadership

■ CONTINUED FROM PAGE 16

In considering the operations of American citizens engaged in the oil industry in foreign countries the government of the United States would wish to assure itself:

1—that American citizens are accorded the rights to which they are reasonably entitled by the terms of their contracts with foreign governments, judged by the laws of that government;

2—that American citizens live up to their obligations to foreign governments and so conduct their operations as to contribute to the national welfare of the country in which they operate;

3—that the operations are conducted in conformity with the best interest of the United States;

4—that the principles of conservation are adhered to in the development of the oil resources;

5—that the exportable surplus move efficiently, in orderly manner and at fair prices, into the markets of consumer nations; and

6—that imports of oil or oil products into the United States be so regulated as to serve the best interest of our domestic economy, including our domestic oil industry.

The government of the United States should collaborate with other governments to establish and maintain orderly production from oil resources throughout the world for the benefit of the consuming nations. Withdrawals from all fields should be ratably adjusted to supply the demand if possible, but, in any event, they should not exceed optimum rate. Exploration should be stimulated as long as any possible resources remain untested. Exportable surpluses should be efficiently and equitably distributed under the provisions of the United Nations' world oil policy.

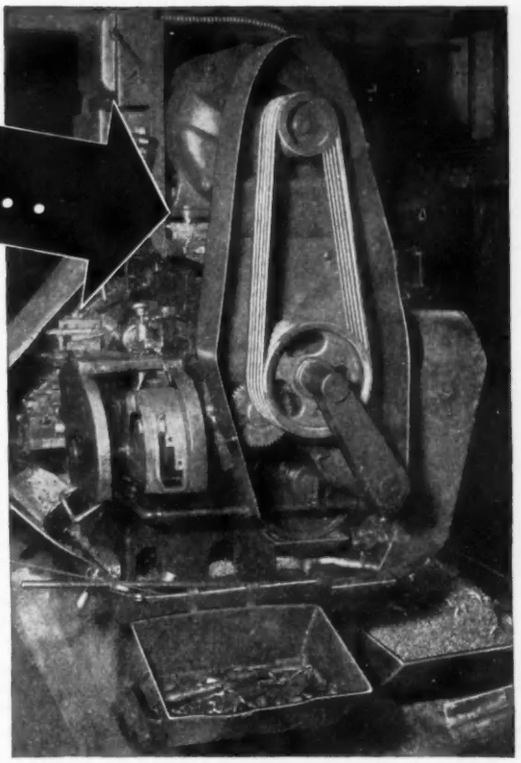
Imports of oil or oil products into the United States must supplement domestic supplies to meet the national demand, without working a hardship on the domestic industry or stifling oil-finding at home. Imports should be admitted only to supply special products, or demand that cannot be met by withdrawals from domestic oil fields at rates not in excess of the optimum in each case.

The adoption of the policy proposed above will secure adequate petroleum reserves to meet the future needs of our own nation and of the other nations of the world more certainly and more rapidly than any alternative procedure. No more effective contribution to future world peace is likely to be devised.

On This Screw Machine . . . .

GATES V-Belts of Special Synthetic Rubber

wear more than 3-TIMES as long as belts of NATURAL Rubber!



Here is an excellent example of how well it pays to consult the Gates Field Engineer on *any* problem of drive operation.

On the screw machine pictured above, the Macomb Screw Products Company used natural rubber V-belts, getting 6 to 8 months' wear at 12 to 18 hours per day. Because a *severe oil condition* existed, the Gates Field Engineer recommended changing to Gates V-belts of special synthetic rubber. These special synthetic belts are averaging 18 to 24 months' wear at *24* hours per day—an increase of 300% to 400% in belt life!

You may not have in your plant any drive which offers this *particular* problem—yet *other* service conditions may be such that a V-belt of some special construction can most profitably be used. For example, in your particular installation, V-belts with tension members composed of flexible steel cables may prove to be the most efficient and economical. Again, Rayon Cord V-belts or Static-Safety V-belts may best fit your special need.

In any case, the wisest move you can make is to phone the Gates Field Engineer. He is thoroughly competent to analyze any drive problem. He is completely informed on the nature and advantages of every type of belt. He will always recommend the practice that will be most efficient and economical for you.

Your Gates Field Engineer Can Tell You Whether YOU Need—

1. *Special* Synthetic V-Belts
2. Steel Cable V-Belts
3. Cotton Cord V-Belts
4. Static-Safety V-Belts
5. Rayon Cord V-Belts

Your Telephone Directory Will Give You the Gates Field Engineer's Phone Number

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PORTLAND, ORE. 333 N. W. 5th Avenue
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PRACTICAL OPERATING *Hints* FOR THE PRODUCTION MAN

$5.00 will be paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, *Houston.*

1. WELL SERVICING

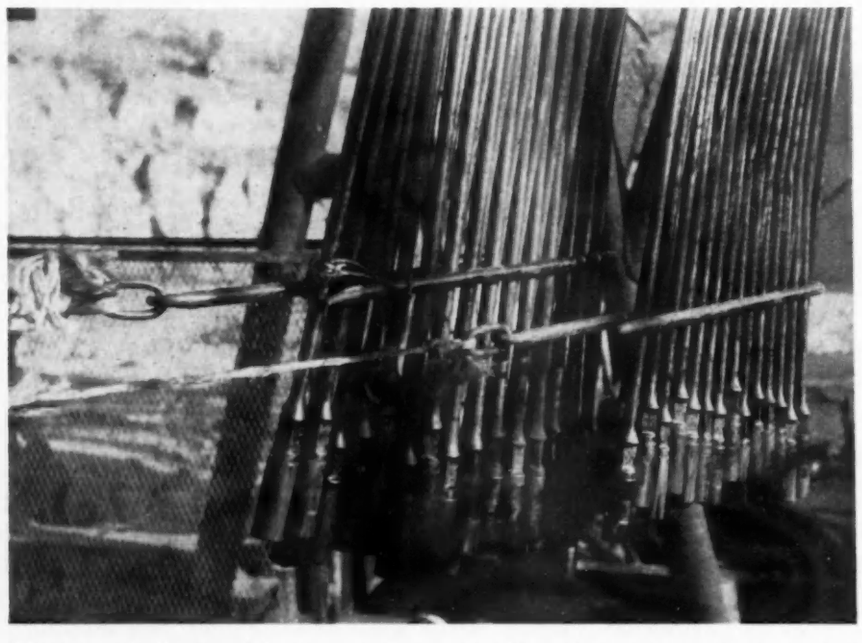
Sucker-rod Retainers Speed Clean-out Job

IN A MOVE to save man-hours as well as pulling unit time, one production foreman utilizes lengths of sucker rod material to provide efficient sucker rod hold-backs. Each was made of a 6-foot length of sucker rod bent double near its center with the longer end made into an "eye" for a tie-back. The other end of the rod was tapered and flared out in hook fashion to facilitate entry of the rods into the hold-back.

Width of the slot is governed by the size of the rods to be handled, provision being made for the inside diameter to be approximately one and a half times the diameter of the nominal size of rod to be held. The result was that the rods could "overlap" slightly in the holder, but they would at no place be two deep. This afforded easier counting of the stands as they hung in the derrick, and the checking of boxes and upset ends for nicks or possible thread failures.

This idea was found to be particularly useful when the well has a tapered string of rods. Two holders, instead of one, are then utilized, each holding a single size of rod. Should it be necessary to replace or remove certain rods of one or both sizes it is a relatively simple matter to make the change and little time is consumed in the operation.

Portability of the hold-backs is another important factor. It is the work of only a minute or two to tie them to a corner of the rig, and they take up very little space in the tool box or on the truck bed.



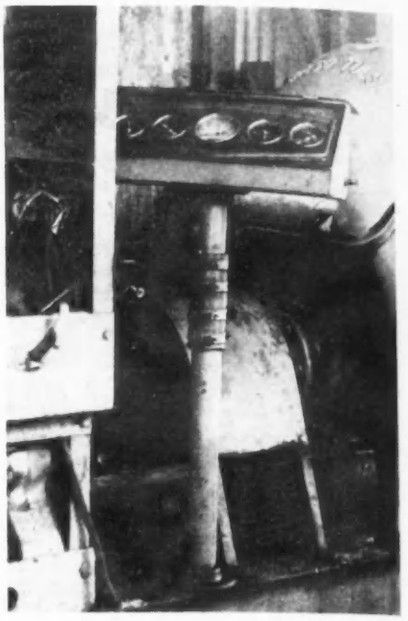
Deep narrow hooks, formed from scrap rod, serve to retain rods so as to permit check of pin and box condition, without impeding handling of string into well again.

2. INSTRUMENTS

Snubber Stand Aids Unitized Panel

WHEN it is required that the instruments be mounted on the same base which supports both engine and pump of a unitized field or lease gathering system, either engine vibration or pump pound may cause excessive wear on the relatively delicate bearings within the instruments, resulting in premature servicing or inaccurate readings.

One company mounts the instruments in a panel somewhat similar to an automobile dashboard, carrying the assembly on a standard supported from one of the two main skid beams. Near the top of the pipe standard it is cut and a short section of heavy radiator hose, of the proper diameter to fit the pipe closely, is installed. Dual clamps on either side of the cut provide firm grip on the hose and prevent more than slight travel of the instrument panel in any direction, while the severing of direct metal contact through the ⅛-inch or so of gap between pipe ends effectively dampens out vibrations and greatly extends the useful life of the instruments.



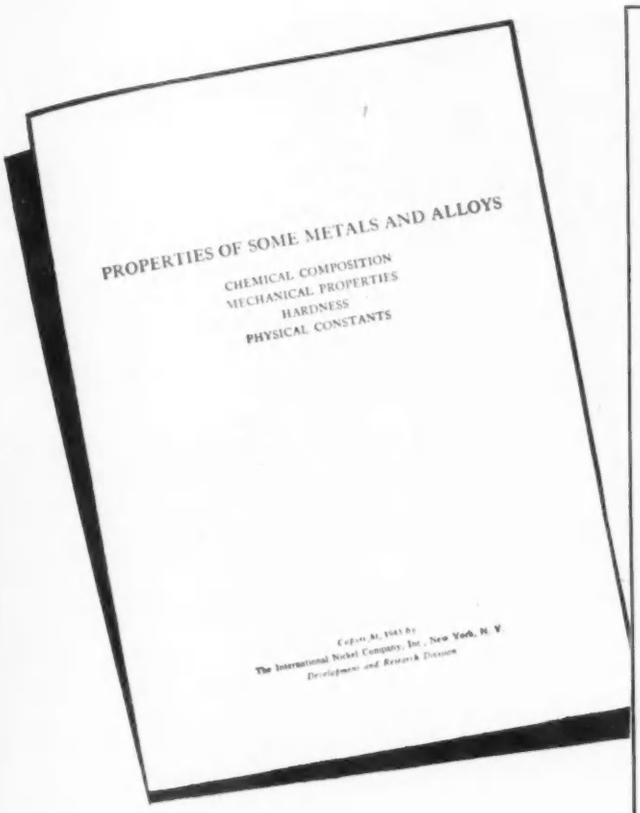
Short hose section in standard absorbs vibration and aids in extending life of tiny bearings.

3. COMMUNICATIONS

Weatherproof Box Protects Messages

A COMMUNICATION system kink is helping to alleviate the manpower shortage in the field. When pumpers or gaugers have to leave a word for the man coming on the next tour regarding the status of a particular well or time to switch production from one tank to another, a message is left in a small receptacle secured to any convenient well derrick member or floodlight post nearest the line of travel of the man coming on.

The container consists of a 12-inch



Selecting the metal with the right combination of properties for a particular job is easier with the new Inco Bulletin ..."Properties of Some Metals and Alloys"

This booklet won't solve any complex technical problems. It isn't intended for that.

But it does provide a handy, quick comparison of 108 metals and alloys, compiled in easy-to-read chart form from recent information supplied by the metal producers.

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Sheet...Strip...Rod...Tubing...Wire...Castings

New Summary of Data on 108 Metals and Alloys

Monel (wrought and cast)
"R" Monel, "K" Monel
"H" Monel, "S" Monel
Nickel (pure, wrought and cast)
"D" Nickel, "Z" Nickel
Inconel (wrought and cast)
Hastelloy A, B, C, D
Illium G, R
Alcoa 2S, 3S, 17S, 52S, 53S
Alclad 24S
Alcoa 13, 43, 195, 214, 220
Copper
Red Brass (wrought and cast)
Yellow Brass (high brass)
Naval Brass (Tobin bronze)
Admiralty Brass
Muntz Metal
Manganese Bronze
Silicon Bronze
Phosphor Bronze 5%
Aluminum Bronze
Beryllium Copper
Nickel Bronze (cast)
Nickel Silver 20% (cast)
Nickel Silver 18% (wrought), 13% (cast), 10% (wrought)
Ambrac 20%
Cupro-Nickel 70-30, 55-45
Tin
Chemical Lead
Antimonial Lead
Tellurium Lead
Soft Solder 50-50, 60-40
Zinc
Zilloy 15, 40
Dow Metal E, H, R, X
Silver (pure)
R-T Silver Brazing Alloy
Easy-Flo Silver Brazing Alloy
Gold (pure)
Platinum (pure and commercial)
Iridium-Platinum 10%
Rhodium-Platinum 10%
Palladium (commercial and hard)
Tantalum
Iron (wrought, ingot and cast)
Ni-Tensyliron
Ni-Resist (standard and copper-free)
Ni-Hard, low carbon, high carbon
Carbon Steel (SAE 1020)
Cast Carbon Steel
Cast Alloy Steel
Stainless Steel 304, 309, 310, 316, 321, 347, 325, 410, 420, 430, 446, 312, 330
Cast 18 Cr 8 Ni Steel
Cast 18 Cr 8 Ni 3 Mo. Steel
Invar
Cast 28 Cr 10 Ni Alloy
Cast 35 Ni 15 Cr Alloy
60 Ni 15 Cr Alloy (wrought and cast)
80 Ni 20 Cr Alloy
Iron Silicon Alloy
Durichlor
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DEPENDABILITY
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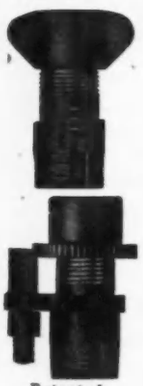

This Line Wiper, as illustrated, is available with or without the remotely controlled Packing Nut Tightener. It is the most versatile line wiping and oil saving device of its kind.

The size with 3" bottom connection will allow tools 1¾" OD to pass through it.

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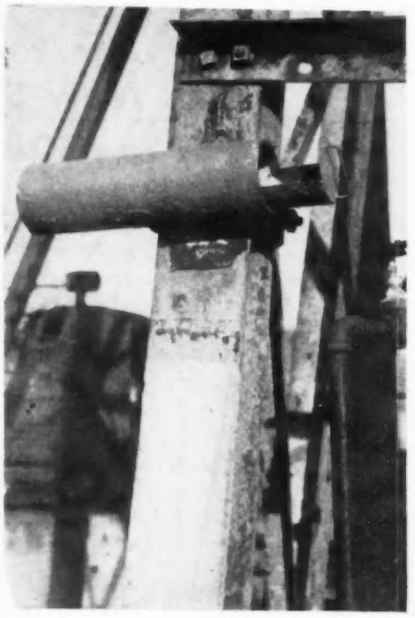


Sliding trough inside pipe cover retains and protects messages against wind and weather.

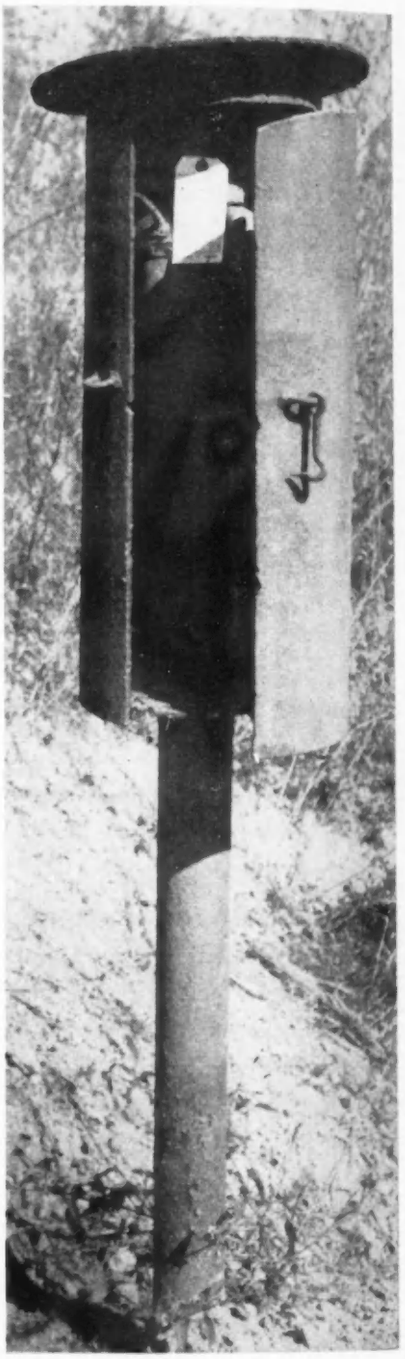
length of 3-inch pipe closed at one end. A tray of a half-section of slightly shorter piece of 2½-inch pipe was fitted with a welded disc cover and handle on the outer end. The note is placed in the tray and is shoved inside the outer tube where it is then well protected from the rain and wind until the next man picks it up. Made of scrap materials and utilizing but a few minutes of the welder's time, this receptacle has paid dividends not only in making up for shortages of manpower, but in increased efficiency in lease operation as well.

4. FIRE PROTECTION

Pedestal and Case Guard Extinguishers

TO PROTECT fire extinguishers in the field from the weather, yet make them readily available in case of emergency, one company designed small, compact containers which could be mounted at strategic points on the lease. A short section of 10-inch casing, some six inches longer than the over-all length of a soda-type fire extinguisher, was worked over by the company welder. A doorway was cut in one side and the cut-away section then hinged to its original position. A hook-and-eye latch was welded to the door section. The upper end was cut back on a slant and a steel disc several inches greater in diameter than the casing then was welded on, providing a neat-appearing and practical cover for the housing. The bottom likewise is a steel disc, welded inside the diameter of the pipe, providing a skirt for better protection from the weather. The entire chamber was welded to a 3-inch pipe pedestal.

Painted a brilliant red for easy recognition from a long distance, the chamber and pedestal represent very little in actual cost, being made entirely of scrap materials. Maintenance of the fire extinguishers, including care and protection of the rubber hoses, is reduced, inspection cards are kept in legible condition, and there is less likelihood of tampering in the field when the holder is latched.



Formed from pipe sections, this unit displays and protects standard portable foam-type unit.

☆ ☆ ☆ ☆ WASHINGTON ROUNDUP ☆ ☆ ☆ ☆

February Figures Set by PAW Are Sharp Downward Trend

Elk Hills Lease Hearing Splits Both Congress and Committee

PIWC Oil Policy Group Is Headed by John A. Brown

Reorganization Favorable to Post-war Oil Operations

By B. F. LINZ,
Washington Correspondent

☆ ☆ ☆ ☆

A DEMAND by two republican members of Congress, Senators Ralph O. Brewster of Maine and E. H. Moore of Oklahoma, for immediate liquidation and dissolution of Petroleum Reserves Corporation marked a Washington week in which developments in general were slanted toward the future.

A resolution sponsored by the two senators charged PRC with imperialism and warned that its activities would be inimical to the best interests of the nation and the oil industry. Its introduction in the Senate climaxed several months of growing opposition to the administration's plans for engaging in the foreign oil industry, which the PIWC at its last meeting warned Secretary Ickes were not compatible with his promises of assistance in restoring the ante-bellum competitive status and his repeated assertions that there should be no government control or interference with the industry. Other developments indicating the thought which is being given the future by Congress, the administration and the industry, all directed their thoughts toward months to come.

In Congress, the United Nations Relief and Rehabilitation Administration took the spotlight as the House wrangled over the question whether an international WPA would grow out of the effort to supply Europe with necessities of life and start it back on the road to peacetime economy, but the House public lands committee took time out to hear Rear Admiral Harry A. Stuart, director of Naval reserves, defend the rejected contracts with Standard Oil Company of California as the best method of conserving the resources of the Elk Hills reserve.

In administration circles, the potentially important move was the reorganization of the State Department in which provision was made for the postwar protection of the interests abroad of the American oil industry. How important this will prove actually, will depend largely upon the adoption of a foreign oil policy by the government, without which it may be the same picture in a different frame.

The industry also moved to peer into the future, with PIWC Chairman William R. Boyd, Jr., naming a 16-man committee to formulate a national oil policy, both foreign and domestic, in line with a decision made at the January meeting of the council.

But the future held less optimistic aspects, too, as officials in Washington evinced concern over domestic supplies and hinted broadly of scarcities to come which, one official said, would result in the forced laying up of many private automobiles for lack of gasoline. The situation in the East has not been improved by the some 70 breaks in the Little-Big-Inch line which have held up its operation for two months, the slackening off of tankcar deliveries, due in part to a relaxation of diligence on the part of companies in unloading and returning cars and in part to the recent influenza epidemic which slowed down rail transportation generally, and the rapid deterioration of tank trucks.

To round off the week properly, an international conference proposed establishment of a world-wide petroleum cooperative society to own and operate its own wells, refineries and tankers in nonprofit competition with the international "oil cartels." Such an undertaking could be launched for a mere $12,000,000, its proponent estimated.

Senate Resolution Asks Liquidation Of PRC on Grounds of Imperialism

Challenging the legality of the Petroleum Reserves Corporation and charging that ownership of oil outside the confines of the country smacks of imperialism and would be inimical to private industry, Senators Ralph O. Brewster of Maine and E. H. Moore of Oklahoma introduced a resolution in Congress January 21, calling for the liquidation and dissolution of PRC.

If action can be secure on the measure, it will offer Congress its first opportunity to express itself on the question of the administration's foreign oil policy.

The resolution calls upon Ickes, as president, and the other federal officials who constitute the directorate of the corporation to forthwith "commence its liquidation and to complete it within twelve months, in the meantime neither buying, selling, acquiring or disposing of any property rights or interests of any nature whatsoever except as required for liquidation.

"The creation of said Petroleum Reserves Corporation dedicates the United States government to the policy of becoming a direct owner, wholly or in part, of oil concessions in fee or by lease, contract or otherwise, located within the boundaries of foreign countries and within the control and jurisdiction of foreign governments," it was pointed out in the preamble of the resolution.

"The engaging in such activities by the United States government through the instrumentality of Petroleum Reserves Corporation or otherwise constitutes a policy of imperalism contrary to the basic principles of private enterprise and in violation of the constitutional concepts of government to which the government of the United States is committed by law and national and international tradition."

Such activities, it was set forth further are "not compatible with the announcements of respect for the complete integrity and sovereignty of all nations, and such motivation is not likely to receive the respect of a peaceful world" and will encourage other countries "to likewise engage in the petroleum business, which will result in governments engaging in direct rivalry and competition for petroleum properties and trade," possibly involving the government in dangerous and entangling difficulties with foreign countries.

"The ownership of the United States government of property rights and interests in other countries may well be a growing source of future international disputes and may contribute to those international feelings which arouse national pride and hatred and bring about international conflicts," it was warned.

The two senators pointed out that under private ownership and management, the oil industry performed a great and patriotic service" in World War I and is performing such service in the present war," and has placed at the disposal of the United States government every barrel of petroleum and petroleum products owned or controlled by any unit of the petroleum industry, wherever located, and has made available to the United States government every refinery, transportation and marketing facility owned or controlled by any unit of the petroleum industry wherever located.

"The United States government could not have acquired or made available to the armed forces of the United States or to the armed forces of the Allies of this government one additional barrel of petroleum or petroleum products, dur-

ing the present war, had the government of the United States owned all of the known oil reserves now owned or controlled by private members of the petroleum industry."

Gasoline Shortages Seen For East and West Coasts

Shortages as severe as any the East Coast has experienced in the past are threatening to occur on both the East and West Coasts within a matter of a few months, the result in part of an anticipated stepping up in military activities and in part from depleted transportation facilities.

In the East, the transportation situation is rapidly tightening. Tank-car deliveries have dropped below the 700,000 to 800,000 barrels daily which PAW estimates as the minimum required. The Little-Big-Inch has been delayed 60 days, depriving District 1 of large supplies which had been counted upon, and tank trucks are being laid up in increasing numbers, due to the difficulty of securing repair parts and then of getting men to do the work, necessitating the use of tank cars for short hauls.

On the West Coast, a similar situation is said to be building up, with the added factor that an increasing amount of coast production is being required for military use.

Speaking of the Eastern situation, Ickes said January 20 that "it will get worse before it gets better," complained that motorists are not living within their rations, that a black market still exists and that "we can't persuade people to get along on less.

"We simply have to bump along until they drive up to a filling station some day and find there is no gasoline," he said.

What to do about the situation is occupying the minds of the best men in PAW, who have long recognized the certainty of a sharp tightening up of the supply situation when the invasion of Europe gets under way.

International, Non-Profit Oil Co-Op Is Proposed

An international oil cooperative, competing with the petroleum industry on a non-profit basis, owning its own wells, refineries and tanker fleet, was proposed January 20 before a Washington conference of the Cooperative League of the United States.

The proposal was made by Howard A. Cowden of North Kansas City, chairman of the league's international cooperative reconstruction committee, as one phase of a huge international cooperative to trade also in food and related supplies, before representatives of 20 foreign nations, to combat the machinations of "international cartels."

Cowden said the oil undertaking would cost $12,000,000 and could "provide a measure of competition for the oil cartels which undoubtedly regard the war merely as an interlude to the resumptions of business as usual."

"Plain people," he added, "deeply resent the policies of some of these cartels which have left America weak in certain respects and her enemies strong. The plain people know that democracy cannot be achieved under the banner of industrial super-government."

PAW Certificates for February Show Downward Trend; Five States Increased

A sharp downward trend in crude oil production next month was disclosed January 18 in certifications of PAW to the states, calling for a production rate of 4,701,400 barrels daily of all petroleum liquids, a reduction of 5750 barrels from the current rate.

The cut in oil production will be more pronounced than the over-all curtailment, since an increase in natural gasoline and condensate output from 277,550 barrels daily for January to 282,600 barrels for February will reduce the oil allocations by 10,800 barrels a day, from 4,429,600 barrels now to 4,418,800 barrels next month.

Production in Districts 1, 2 and 4 will be cut, that in District 2 to conform with declining productive capacity and in District 4 to balance production against a temporary reduction in transportation facilities in Wyoming caused by the shifting of large tank cars to the Eastern Seaboard. District 3 is reduced slightly, while District 5 is increased as a result of additional productive capacity furnished by new wells completions and upward revision of the maximum efficient production rates for several fields.

Of the 20 producing states, increases were approved in only five, while another four were left unchanged, the remaining 11 being given reductions.

The crude allocations for the several states were as follows:

New York, 13,400 barrels against 14,000 barrels this month; Pennsylvania, 41,000 barrels against 42,100 barrels; West Virginia, 8800 barrels against 9000 barrels; Illinois, 215,000 barrels, unchanged; Indiana, 14,000 barrels against 14,400 barrels; Kansas, 285,000 barrels, unchanged; Kentucky, 25,200 barrels against 26,000 barrels; Michigan, 50,000 barrels against 56,000 barrels; Nebraska, 1200 barrels against 1300 barrels; Ohio, 9000 barrels against 8900 barrels; Oklahoma, 328,000 barrels, unchanged; Arkansas, 76,600 barrels against 76,900 barrels; Louisiana, 348,700 barrels against 343,700 barrels; Mississippi, 46,000 barrels against 48,000 barrels; New Mexico, 110,700 barrels against 110,600 barrels; Texas, 1,886,000 barrels against 1,892,000 barrels; Colorado, 7000 barrels, unchanged; Montana, 23,700 barrels against 23,500 barrels; Wyoming, 93,000 barrels against 100,000 barrels; California, 836,500 barrels against 828,800 barrels.

Production rates for natural gasoline and condensate are as follows:

Pennsylvania, 1800 barrels against 1600 barrels; West Virginia, 7800 barrels against 7400 barrels; Illinois, 12,600 barrels against 12,700 barrels; Kansas, 6100 barrels against 6200 barrels; Kentucky, 2900 barrels against 3000 barrels; Michigan, 200 barrels, unchanged; Ohio, 400 barrels against 450 barrels; Oklahoma, 28,000 barrels, unchanged; Arkansas, 5100 barrels against 4800 barrels; Louisiana, 27,000 barrels against 32,000 barrels; New Mexico, 5900 barrels against 6000 barrels; Texas, 132,000 barrels against 126,000 barrels; Montana, 300 barrels, unchanged; Wyoming 5800 barrels against 3400 barrels; California, 46,700 barrels against 45,500 barrels.

The over-all certification of 4,701,400 barrels for February compares with actual production of total petroleum liquids of 4,108,400 barrels daily in that month last year.

Texas February Allowable Higher Than PAW Mark

The Texas Railroad Commission has issued its February proration order fixing a net production of 2,052,693 barrels a day, or 34,693 barrels higher than the PAW recommendation of 2,018,000 barrels a day.

Virtually the entire change was accomplished by reducing to 21 the number of producing days for February. In January the fields generally were allowed to produce 23 days. The proration schedule called for a net allowable totaling 2,053,453 barrels per day. The commission estimated that under-production of 6.66 percent would amount to 136,760 barrels per day. This left an estimated total oil production of 1,916,693 barrels daily. The under-production in oil will be offset by production of 136,000 barrels of distillate and natural gasoline each day.

In this manner the total crude and natural gasoline production was estimated at 2,052,693 barrels daily.

Because East Texas was left with 23 producing days, the field allowable was raised from 371,898 barrels to 396,498 barrels daily. The Panhandle is permitted to produce every day, which will raise the total there from 112,020 barrels to 121,708 barrels daily.

Bay City was cut from 5511 barrels to 4680 barrels. McElroy was raised from 21,835 barrels to 24,195 barrels per day. Waddell was raised from 4478 barrels to 4787 barrels daily. The scheduled allowables in the other fields were not changed.

The shutdown days are as follows:

26 Producing Days: West Mauritz, Harmon, Mayo, Amelia, Clear Lake, Sugarland, Webster, Orange Grove. Antelope (Miss. Lime), Bindel, Bonita, Chapman-McFarlin Clingingsmith, Cooper, Hapgood, Hoefle, Kadana, Kadane Shallow, Mankins, Mueller, Knox (Miss. Lime), Ringgold Sanders, Scotland, Scotland (Miss. Lime), Wilson, Forestburg, Worsham-Steed, Rock Crossing (Ellenberger), Padgitt (Miss.).

23 Producing Days: East Texas, Emperor, Goldsmith, Seymour.

24 Producing Days: Coke.

17 Producing Days: Tom O'Connor, Slaughter, Wasson.

15 Producing Days: Hawkins.

All other fields are exempt from shutdowns.

At the statewide hearing, Humble Oil & Refining Company had complained that it was receiving more oil than it could handle in several fields. The difficulty arose from a shortage of tank cars and diversion of markets to other producers. The company explained that it had planned to move 17,000 barrels a day by tank car from Hawkins during

January, but cars for only 8000 barrels were available. During the remainder of this month it thought a maximum of 10,000 barrels could be handled and this condition would continue in February. As a result the company cut its nominations 7000 barrels to 15,000 barrels per day.

Because Standard Oil Company of Louisiana has reduced its February purchases by 5000 barrels per day, and a purchaser has been found for only 2500 barrels, Humble Oil & Refining Company cut its nominations for Talco 2500 barrels to 14,000 barrels per day. The company offered its connections to any other purchaser, and Talco Pipe Line Company said it would take some of this oil to maintain its purchases at 8300 barrels per day.

Humble Pipe Line Company's situation in West Texas was equally difficult because the War Emergency Pipe Line Company is beginning to take oil from Beaumont rather than from Humble at Corpus Christi. Purchases there will be down 15,000 barrels per day during February. This loss is permanent. Up to this time the company had been handling 55,000 barrels of West Texas oil daily at the Corpus Christi terminal, but some of the oil has been going to storage. As a means of relief, the company asked that the commission determine total demand for West Texas oil and allocate it equally among all the fields so that its connections would not suffer the entire loss.

The bottom-hole pressure in the East Texas field rose 5.03 pounds in December. During 1943 the field produced 128,606,545 barrels of oil which was approximately 7,868,329 barrels above the 1942 production.

The 1943 pressure drop was only 3.27 pounds while in 1942 the decline was 9.87 pounds.

During December an average of 306,811 barrels of salt water daily was injected into the reservoir. This was 70 percent of the total water production and seemed to account for the reduction in pressure decline. Better results during 1944 were indicated.

Phillips Petroleum Company asked that the commission remove shutdown days from the Panhandle during February. The company needs 47,000 barrels of oil daily during that month, or 4000 barrels more than it got in January.

Congress and Lands Committee Divided As Elk Hills Lease Hearing Is Opened

Hearings on the Navy's efforts to wrest the Elk Hills oil properties out of the hands of Standard Oil Company of California were reopened by the House Public Lands Committee January 18, with Rear Admiral Harry A. Stuart, director of naval reserves, submitting a strong defense of the contracts made by the department with the company which were held illegal by the Department of Justice.

As the hearing opened, it was indicated that a fight might be made between congressional groups favoring condemnation of the company's lands and others supporting amendment of a 1938 law so as to permit the acceptance of an agreement which Attorney General Francis Biddle told the Naval Affairs Committee last month could not be entered into without congressional action (THE OIL WEEKLY, December 13). The Public Lands Committee, however, is conducting its inquiry on the basis of a bill to extend the Naval Reserve No. 1.

That members of the committee themselves are split on the best method of dealing with the situation was evidenced by a request of Representative O'Connor of Montana for consideration of his resolution for condemnation of the property, while Representative Elliott of California contended that neither condemnation nor purchase was necessary. It was charged that the administration had blocked an effort to send a subcommittee to California to investigate the situation and said that the Naval Affairs Committee had investigated by flying over the reserve but with no real inquiry on the ground.

It was also brought out that Chairman Vinson of the Naval Affairs Committee favors condemnation and has indicated that if the proposed contract is not approved, legislation to that end will be introduced next month.

The whole history of the naval reserve was given by Stuart in a 27-page statement supported by a number of letters between Secretaries of the Navy and officials of the oil company over a period of several years.

Navy's Position

By inference, he told the committee that the Elk Hills project was not another Canol—"we saw no wisdom, and we see none now, in spending government money to build and maintain a refinery, pipe-line and storage facilities which, if we have our way, will not be used, at least for many years," he said, and also took pains to show that the Navy, unlike the Army, had not been unwilling to avail itself of experts in other departments, explaining an agreement whereby the Geological Survey furnished much of the technical services required.

"Simply stated," Stuart explained, "the Navy's problem and the national policy has been, is and, until the private interests in the field are eliminated or controlled, will continue to be: Prevention of drainage from Navy's lands and conservation of Navy's oil in the ground.

"The protection of our reserves is regarded as insurance against the day when other domestic sources are inadequate or no longer available. With the decrease of our domestic petroleum supply and the increase of our Naval responsibilities in the Pacific area, the prompt accomplishment of these long sought objectives has become more and more imperative in the last few years. If our commercial supply is depleted before the supplies of an enemy, we will then be in a position to draw upon the reserves."

The 1938 act, Stuart said, authorized the Navy to enter into contracts for operation and development of the reserve, enter into compensatory royalty agreements with the private interests, exchange government lands for private lands to consolidate the respective holdings or, as a last resort, acquire ownership of the private lands by purchase or condemnation.

Compensatory royalty agreements, he went on, were considered unsatisfactory because they did not protect the reserve against drainage; efforts to negotiate an exchange of lands were unsuccessful, and the Navy was reluctant to purchase or condemn. Accordingly, efforts were made to secure unit-operating arrangements.

The possibilities of an exchange of lands were explored over a long period beginning in March, 1940, when specific proposals were submitted to the Standard Oil Company. The company came back with alternative proposals, one involving an exchange and a large cash payment by the government; another for purchase by the government of 50 percent of Standard's interests in all zones below present producing or proven horizons, and a third inviting a substantial cash offer by the government for postponement of the exploitation of the company's properties.

The department, Stuart said, was anxious to get $195,000 for drilling test wells to aid in reaching a reasonable valuation of the properties involved, but the Budget Bureau objected to the item in the fiscal year 1941 and, on appeal, President Roosevelt approved the program but ordered it delayed until the fiscal year 1942. Congress provided the appropriation but the Budget Bureau refused to release the money and another request to Congress in the fiscal year 1943 was turned down.

Later in 1940, the Acting Secretary of the Navy asked the company to set a price for its holdings which were intermixed with those of the government and for a 50-percent interest in its holdings in the deep sands within the reserve.

In answer, Stuart said, "Standard was still insisting that the precise value of their lands was unknown and that only test drilling would supply sufficient data for the purpose of negotiations. It was apparent from this letter that the company was going to commence such drilling as might be necessary to protect its interest in the event of litigation."

In March, 1942, the President instructed the Navy to "proceed immediately" with negotiations toward the purchase of the lands or, failing satisfactory arrangements for purchase, with condemnation proceedings.

Valued at $219,000,000

Standard was immediately asked what value it placed on its properties and set a figure of $219,000,000 which would net the company approximately $146,373,000 after allowing for income taxes of some $73,000,000.

"Progress was discouraging," Stuart commented as he continued his outline of the negotiations, but finally a tentative agreement was reached whereby the government would take title to all of Standard's lands and pay the company approximately $2,000,000 in cash, with an agreement that the company would operate all the wells under Navy's direction and produce an agreed quantity of oil daily during the period of the war emergency. The quantity of 15,000 barrels daily for five years, or a maximum of 27,500,000 barrels, was the

eventual outcome of this trading in exchange for absolute Navy control of all production from the field after five years. This would amount to less than 10 percent of the more than 300,000,000 barrels in the shallow zone alone.

"Production of 10 percent to conserve 90 percent we felt was a satisfactory adjustment of our conflicting interests—theirs to produce and ours to conserve—particularly when that 10 percent was needed for the present war," Stuart explained. "It represented only a little more than a quarter of the estimated interest of Standard in the shallow sands alone. In addition, we conserved all the gas in the gas sands and all the oil in the Stevens and other deep sands."

At this point Secretary Knox suggested enlarging the reserve to include the balance of the known geologic structure of the shallow zone, and an executive order was issued October 15, 1942. Expansion of the reserve involved negotiations for the acquisition of the interests of Union Oil Company, B and M Oil Company, Richfield Oil Company and some lessees of non-productive property.

Stuart denied inferences that there was any "disingenuous connection" between the Navy-Standard contract of November 20, 1942, and legislation pending in Congress for expansion of the reserve, asserting that the Navy had been interested in stopping private exploitation in the vicinity of the reserve as far back as 1924.

Stuart declared that the Department of Justice had ample opportunity before that contract was signed to pass on its validity, copies of the agreement, deed and other title papers being sent to the Attorney General December 19, 1942, for preliminary opinion on Standard's title and as to what further steps were necessary to vest title in the United States. It was not until some months after the contract had been approved by the President that the department expressed is disapproval.

Stuart brought to the hearing two of the technical men who had been connected with the administration of the reserve to testify on engineering and geological phases—Commanders Victor Wilhelm, formerly chief petroleum engineer of the western division of The Texas Company, and Harry P. Stolz, formerly a consulting petroleum engineer in Los Angeles, both of whom had served on the naval petroleum reserve advisory board in 1938 before being called to active service.

Four Fields Subject to Paragraph (f) (2) PAO 11

It was recently announced by PAW that the following fields are subject to paragraph (f) (2) of PAO 11, as amended January 1, 1944: El Campo, Wharton County, Texas; Gueydan, Vermilion Parish, Louisiana; LaPice, St. James Parish, Louisiana; and Noelke, Crockett County, Texas.

This provision of the order provides that where the oil well is located on non-sectionalized land, the provisions of subparagraph (f) (3) must be complied with; and the well must be located on a drilling unit consisting of at least 40 contiguous surface acres upon which no other drilling or producible well is located; and the distance between any two points farthest apart on the drilling unit upon which the well is located must not exceed a distance of 2100 feet; and no portion of the drilling unit attributed to the well shall fall within 330 feet of any other drilling or producible well located on the same lease or property.

Middle East Group En Route Back With Mass of Data

Members of Petroleum Reserve Corporation's mission to the Middle East, with the exception of William E. Wrather of the Geological Survey, are on their way home after having been held up in London while priorities for plane seats were being arranged.

Wrather, the victim of a serious illness, is now recuperating rapidly and is expected to be able to travel within a few days.

The mission has made an extensive investigation of the situation and facilities in the Middle East areas, and is understood to be bringing back a rather considerable volume of data.

Rumors that a shake-up of the PRC organization was under way were denied by Ickes January 20, but he did not disclose whether any changes in either personnel or program were contemplated.

PIWC Committee to Formulate Oil Policy

A 16-man committee, headed by John A. Brown, president of Socony-Vacuum Oil Company, as chairman, has been named by Chairman William R. Boyd, Jr., of the Petroleum Industry War Council to formulate a national oil policy covering both foreign and domestic phases of a long-range petroleum program, for recommendation to the government.

The committee was authorized at the last meeting of the PIWC after Administrator Ickes suggested that the industry begin immediately the development of a program which would assure the nation at all times and under all conditions of sufficient oil within its own borders to meet its requirements until it could develop foreign sources of petroleum or adequate production of substitutes.

Membership of the committee, Boyd announced, will include: Otto D. Donnell, president of Ohio Oil Company, Findley, Ohio; J. Frank Drake, president of Gulf Oil Corporation, Pittsburgh; William H. Ferguson, executive vice president of Continental Oil Company, Denver; Walter S. Hallanan, president of Plymouth Oil Company, Pittsburgh; George A. Hill, Jr., president of Houston Oil Company of Texas, Houston; Eugene Holman, vice president of Standard Oil Company (New Jersey), New York; W. F. Humphrey, president of Tide Water Associated Oil Company, San Francisco; J. C. Hunter, president of Mid-Continent Oil and Gas Association, Washington; A. Jacobsen, president of Amerada Petroleum Corporation, New York; W. Alton Jones, president of Cities Service Company, New York; John M. Lovejoy, president of Seaboard Oil Company of Delaware, New York; Albert C. Mattei, president of Honolulu Oil Corporation, San Francisco; Charles F. Roeser, president of Roeser and Pendleton, Fort Worth; Robert E. Wilson, president of Pan American Petroleum & Transport Company, New York, and Ralph T. Zook, president of Independent Petroleum Association, Bradford, Pa.

The committee is to begin its study immediately in preparation for the development of a recommendation for a government policy which Boyd said would be "fundamentally designed to promote the developing and securing of crude-oil reserves and petroleum products the world over in a combined program of war preparedness and maximum peacetime progress of petroleum."

Boyd also announced that B. I. Graves, chairman of the PIWC products conservation committee, has appointed W. W. Wells, former newspaperman and advertising director, as secretary of the committee which, beginning in April, will cooperate with the Office of War Information in a gasoline-conservation publicity program directed to the maintenance of automotive equipment, conservation of rubber and promotion of proper use of transportation facilities through increased compliance with the rationing and car-sharing program.

Truman Group Said Busy As Canol Refinery Readies

The Canol controversy was revived last week, with War Department officials reporting that the four-inch pipe line from Norman Wells to Whitehorse is set for completion about February 17, with the first stage of the refinery at Whitehorse to begin operation in March, producing gasoline and diesel oil, while a spokesman for the Truman Committee said it has not finished with the project and an investigation would be made of the operations of the contractors on the job.

The Truman Committee spokesman charged that the cost of the project was far beyond what it was supposed to be and the study would determine whether funds had been wasted. Army officials, however, said it was impossible to determine costs at this time but admitted that there have been many unanticipated difficulties which would make it run up above estimates.

It was made known that the War Department is negotiating with the Canadian government for a better contract, which will grant some post-war rights to the oil, and in the meantime has suspended its drilling operations.

The contract was sharply criticized in the Truman Committee report last month as giving this government nothing after the war to show for the $135,000,000 it is expending on the wells, pipe line and refinery.

November Sets New High For Natural Gasoline

For the third successive month, a new high record in the production of natural gasoline and allied products was registered in November at 10,752,000 gallons a day, compared with 10,613,400 gallons daily in the preceding month, it is disclosed by the monthly report of the Bureau of Mines.

The major increases, the bureau reported, occurred in Texas, Louisiana and the Appalachian district.

The bureau commented that the ratio of liquefied petroleum gases produced at the plants continued to increase at the expense of natural gasoline. Demand for

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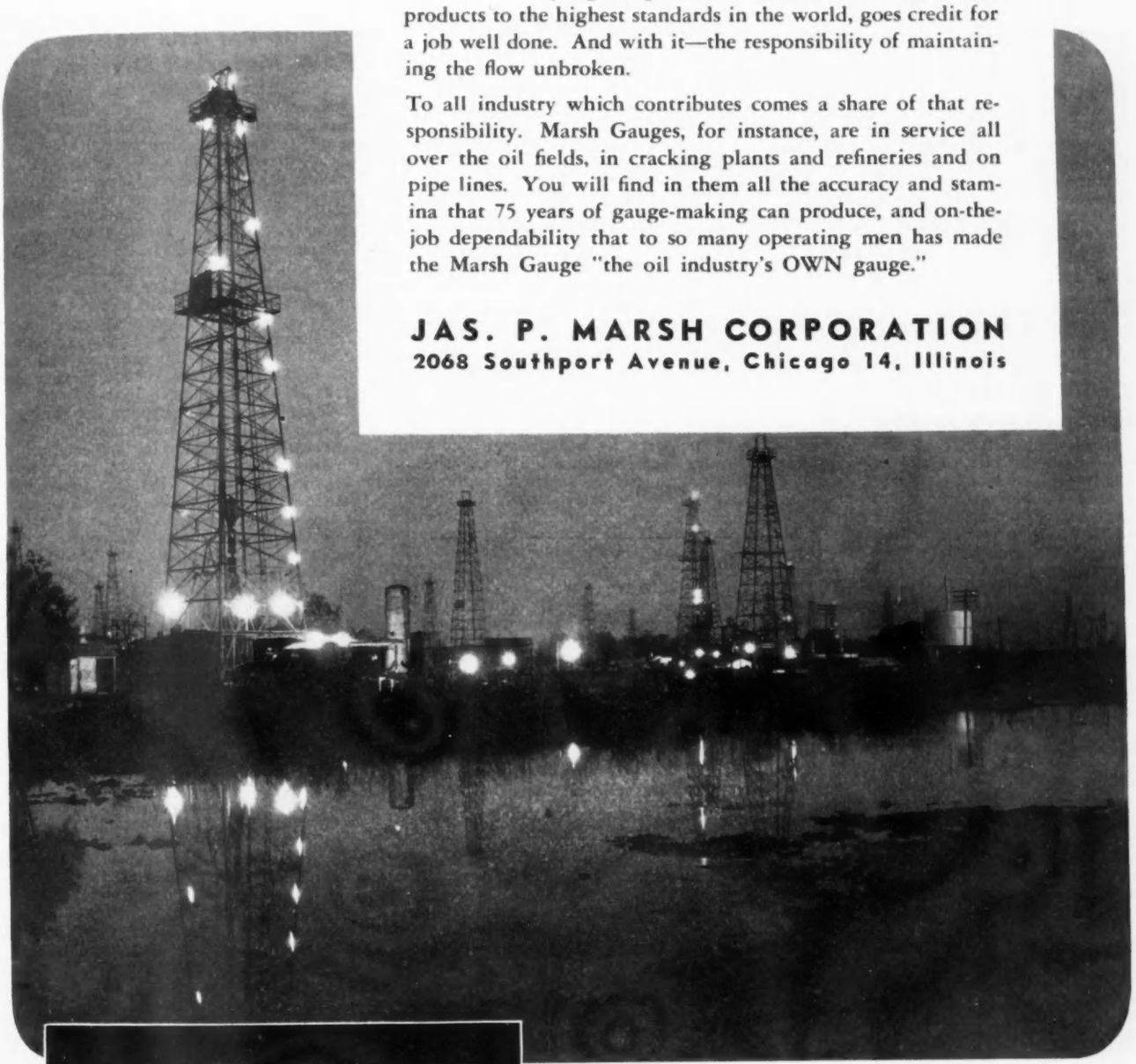

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the liquefied product for fuel increased but the quantities of liquefied petroleum gases used at refineries declined slightly.

The monthly production report showed 173,334,000 gallons of natural gasoline produced in November against 180,432,000 in October; 59,934,000 gallons of cycle products against 60,396,000 gallons; 17,346,000 gallons of isobutane at natural gasoline and cycle plants against 16,338,000 gallons; 72,240,000 gallons of other liquefied petroleum gases at natural gasoline and cycle plants against 71,862,000 gallons; 13,818,000 gallons of liquefied refinery gas at refineries against 11,004,000 gallons, and 8,400,000 gallons of benzol, unchanged.

"The natural gasoline industry is doing an excellent job," Ickes said in commenting on the report. "Setting new production records means that more and more of these valuable light hydrocarbon liquids can be used for the manufacture of high-octane aviation gasoline to meet the rapidly increasing demands as the United Nations step up their mass air attacks against the enemy."

Stocks at both refineries and plants and terminals increased during the month, the former from 101,178,000 to 105,336,000 gallons and the latter from 86,352,000 to 89,754,000 gallons, the bureau reported.

Little-Big-Inch Breaks Cause Worry in East

With some 70 breaks in the welded pipe used on part of the line, Defense Plant Corporation last week was reported to be waiting for a complete engineering report on the Little-Big-Inch pipe line to determine the reasons for the breaks which have set back operation of the conduit for two months and cost the East Coast some 6,000,000 barrels of products which it had been planned to move by the facility.

As DPC delved into the situation, views were expressed that it might not be possible to operate the line at its rated capacity of 235,000 barrels a day without constant danger of break-downs, although it is understood that the breaks which did occur came when the line was water tested at more than the pressure at which it would normally operate.

There were rumors also that the Truman Committee, just recently concluding its investigation of the Canol project and now engaged in probing the cause of cracks in a large number of Liberty ships, would turn its attention to the two big pipe lines in the near future.

PAW officials said the line probably would fall short of capacity operation by 10 to 15 percent, and it was indicated that its daily average would be around 180,000 to 190,000 barrels, making it necessary to develop other means of bringing additional products into District 1.

Deputy Administrator Davies, on January 18, said pumps would be started within a few days to send a small amount of heating oil through the line and that the load would gradually be built up to the limit which engineers figure could be safely handled, but expressed doubt whether more than 90 percent of the 235,000-barrel capacity could be carried. Davies said the delay in getting the line into operation has not resulted in intensifying the situation in the Eastern states.

Stronger Post-war Support Seen for Oil Companies

Interests of American oil companies operating abroad are seen as receiving stronger support from the government after the war than ever before, as a result of reorganization of the State Department in anticipation of the liberation this year of countries now under Axis domination.

The Office of Petroleum Adviser has been transferred to the Office of Economic Affairs, and Charles B. Rayner has been designated adviser on petroleum policy and charged with advisory responsibilities in regard to the foreign petroleum policies of the United States and other governments, the foreign organizations and activities of the American and foreign petroleum industries, and the petroleum resources, production, refining, marketing and transportation facilities of foreign countries.

Included in the Office of Economic Affairs will be a commodities division responsible, among other things, for the initiation and coordination of policy and action in all matters pertaining to the production and control and the distribution in international commerce of major commodities such as petroleum and products and rubber. This division is to maintain liaison with intergovernmental agencies concerned with international commodity problems, PAW and other agencies concerned with oil.

A division of commercial policy also will be part of the Office of Economic Affairs, with responsibility for the initiation and coordination of policy and action in all matters pertaining to the protection and promotion of American commercial interests in foreign countries, the formulation, negotiation and administration of commercial treaties, reciprocal trade agreements and other commercial agreements, and the tariff, general trade and international commercial policy of the United States.

A new committee on postwar programs has been set up to assist the Secretary in the formulation of postwar foreign policies and the execution of such policies by means of appropriate arrangements.

Internal Revenue Allows Pay Based on Percentages

Oil-company executives receiving compensation in the form of percentage on sales, profits or similar factors, whose earnings last year were above the 1941-42 level and they therefore could not be paid in full under the salary stabilization program, may now receive full amount, under a policy adopted by the Internal Revenue Bureau.

Designed to harmonize the 1943 regulations with those to apply to this year, the new policy permits employers to make supplementary payments to adjust the 1943 compensation.

Under regulations which shortly will be issued by the bureau, salesmen working on commission and executives receiving over-riding commissions, bonuses and similar compensation based on a percentage of sales, salary, profits, volume, new business, etc., may be paid all that accrues to them provided no change has been made in the percentage, method of computation, or the employee's base salary, if any, since the beginning of the salary-stabilization program in October, 1942. In other words, the new policy permits payment of the percentages without regard to the dollar amount, while the original policy limited the dollar amount to the level of 1941-42.

Bureau officials said that if the percentage, method of computation or base salary has changed and the employer believes an adjustment is warranted, he may apply for a ruling to the field office of the salary-stabilization unit in the region in which he has his principal place of business.

Claude Parsons Named to PAW Materials Division

Appointment of Claude P. Parsons of Duncan, Oklahoma, vice president of Halliburton Oil Well Cementing Company, as assistant director of the materials division, and K. S. Adams, Bartlesville, Oklahoma, president of Phillips Petroleum Company, as chairman of district 2 production committee, was announced January 20 by PAW.

Parsons, who has had 25 active years in the oil industry after serving as a lieutenant and chief test pilot in the air force at Love Field, Texas, in the last war, started in with Magnolia Petroleum Company and 15 years ago joined the Halliburton Company, which has granted him a leave of absence to serve the government.

Adams has been a member of the District 2 production committee since its creation in 1941. He has been with Phillips Petroleum Company for a number of years and, when he succeeded Frank Phillips in 1938, he became one of the youngest major oil executives in the country. He succeeds Harold P. Fell, who resigned because of ill health and for whose work on the committee, the deputy administrator said, "PAW owes a very real debt of gratitude."

IPAA Seeks Alternative To Oil Price Increase

Thorough exploration by every member of the industry to determine whether any form of subsidy can be developed to meet the suggestion by Stabilization Director Fred M. Vinson that an alternative to a general price increase would be acceptable to the Administration, is being urged by the Independent Petroleum Association of America.

In a bulletin to its members, IPAA points out that the Senate committee in charge of the Disney bill may decide to hold hearings before it acts on the measure and holds that it would be well for the industry to be prepared.

Admitting that a number of such studies have been made in the past without developing any ideas which were acceptable to the industry, the bulletin said "it is appropriate at this time that another study be made, not only because of the administrator's request, but doubly so because some sincere members of Congress cannot believe but that a bonus or subsidy plan will accomplish the same results as a general increase in price.

"One member suggests special treatment for new production, another for stripper wells and still another for secondary recovery. If any hearings are held in the Senate on the oil-price bill the same suggestions undoubtedly will be made by the members of the committee."

Light and Heavy Fuel Stocks Fall Sharply

Last week there were marked declines in stocks of light and heavy fuel oils and nominal gains in total accumulation of gasoline.

Light fuel oil supplies dropped 2,410,000 barrels bringing the total stocks to 39,099,000 barrels. Also heavy fuel stocks declined 1,202,000 barrels, reducing the total reserve to 54,529,000 barrels.

Production of light fuels was estimated at 4,231,000 barrels, compared with 4,434,000 barrels for the previous week, and 3,986,000 barrels a year ago. Output of heavy fuel was 8,459,000 barrels against 9,061,000 a week ago, and 7,470,000 a year ago.

PAW has said that the East Coast still has adequate supplies of home-heating fuel oil in spite of the continuous draft on stocks, but continuation of the balance depends upon consumers remaining prudent in their use of oil.

Gasoline stocks were up 751,000 barrels daily, resulting in total stocks for the week amounting to 78,405,000 barrels. A week ago the total stood at 77,654,000 barrels. A year ago total stocks amounted to 83,585,000 barrels.

Total production of gasoline amounted to 12,682,000 barrels, as compared with 12,630,000 barrels last week.

The estimate of civilian supplies of gasoline the country over, stood at 42 percent of normal; kerosine 47.5 percent; light fuel oil, 86.2 percent; and heavy fuel oil, 67.9 percent.

Refineries operated at 87 percent of capacity with a total of 4,203,000 barrels of crude run to stills daily. Last week the percentage stood at 87.4.

Daily average gross production of crude oil was up 8000 barrels.

Sinclair to Expand System In Southwest Texas

Sinclair Refining Company will expand its Southwest Texas crude oil system, which is currently handling 40,000 barrels daily, through construction of a 35-mile 6-inch extension from Freer station, Duval County, to the Washburn field, LaSalle County. Work on the project, which will involve 20 miles of new pipe and 15 miles of salvaged line, will not be started until February.

More Southwest, West Texas Oil in Big-Inch

The Southwest Emergency Pipeline, Inc., has stepped up its deliveries of crude oil from Permian Basin and Southwest Texas fields to the Big-Inch trunk line to 73,700 barrels daily, or about 25 percent of the total oil moving to the East Coast via the government-owned systems. Humble Pipe Line Company delivers 30,600 barrels of Permian Basin oil daily to Heard station, near Corpus Christi, which is also the receiving point for 43,100 barrels of Corpus Christi district crude supplied by six companies. Southwest Emergency Pipe-

Crude Oil Production in the United States

(Estimates compiled by The OIL WEEKLY. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED January 22	January 15
Arkansas	79,700	79,400
California	795,000	797,550
Long Beach	30,400	30,450
Midway-Sunset	55,050	55,550
Kettleman Hills	41,600	41,600
Wilmington	97,350	97,350
Rest of State	570,600	572,600
Colorado	7,800	7,750
Illinois	203,450	220,000
Salem	25,300	29,800
Louden	34,900	33,850
Other New Pools	131,250	145,000
Old Pools	12,000	11,350
Indiana	12,150	13,000
Kansas	281,050	266,000
Kentucky	23,550	21,250
Louisiana	358,300	358,600
North	77,300	77,900
South	281,000	289,700
Michigan	57,100	46,100
Mississippi	45,550	48,000
Missouri	90	90
Montana	24,329	21,324
Nebraska	1,500	1,600
New Mexico	113,100	113,000
New York	13,100	12,900
Ohio	9,600	9,500
Oklahoma	329,000	329,000
Oklahoma City	48,800	57,050
Seminole Area	72,250	71,250
Rest of State	208,750	200,700
Pennsylvania	37,350	35,350
Tennessee	30	30
Texas	1,900,475	1,899,850
Upper Gulf Coast	520,850	520,900
East Texas Field	366,100	366,050
Rest of Eastern Texas	116,500	116,500
Lower Gulf Coast	194,200	194,150
Southwest Texas	79,700	79,650
South Central Texas	19,925	19,950
West Texas	364,750	364,250
North Texas	140,450	140,400
Panhandle	98,000	98,000
Utah	10	10
West Virginia	9,100	9,000
Wyoming	87,800	89,950
Total United States	4,389,934	4,379,254

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod. Barrels Daily	Week Ended	Runs to Stills Barrels Daily	Week Ended	Crude Stocks Barrels	Week Ended	Gasoline Stocks Barrels	Week Ended	Gasoil and Distillate Stocks Barrels	Week Ended	Residual Fuel Oil Stocks Barrels	Week Ended
Highs:												
1939	3,910	8- 5	3,650	10-21	278,607	5-26	87,769	4-22	39,562	10-28	116,237	8-26
1940	3,890	3-16	3,690	6-22	265,865	8-31	102,817	4-20	49,051	10-19	109,135	9-14
1941	4,337	11-22	4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	4,337	2- 7	3,961	1- 3	263,208	3-28	[1]109,281	3-14	49,861	11-14	95,857	1- 3
1943	[1]4,436	11-13	4,331	12- 4	245,752	5-29	94,159	3-20	46,187	11-27	72,881	1- 2
1944	4,365	1- 8	[1]4,453	1- 1	240,992	1- 1	77,654	1- 8	42,310	1- 1	57,330	1- 1
Lows:												
1939	[3]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,722	4-15	105,397	4- 8
1940	3,335	11-30	3,370	1- 6	237,339	1-27	79,847	11- 9	23,551	4- 6	102,344	2-10
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,381	4-12	90,914	7-12
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12- 5	29,240	4-25	72,962	12-26
1943	3,821	1- 9	3,579	3-13	232,191	1- 9	68,182	10-16	30,732	4- 3	57,596	12-25
1944	4,357	1- 1	4,264	1- 8	240,992	1- 1	76,302	1- 1	41,509	1- 8	55,731	1- 8

TRENDS OF 1942 AND 1943

Trends in Week Ended:	Crude Oil Production Daily	Runs to Stills Daily	Gasoline Stocks Week End	Production Weekly	Stocks Week End	Gasoil and Distillate Production Weekly	Gasoil and Distillate Stocks Week End	Residual Fuel Production Weekly	Residual Fuel Stocks Week End
1942:									
January 3	4,038	3,961	244,440	13,797	92,987	3,855	49,357	6,918	95,857
January 31	3,871	3,848	250,740	13,292	97,810	3,817	40,674	6,640	91,189
February 28	4,016	3,675	259,373	12,131	105,635	3,799	34,547	6,813	88,285
March 28	3,820	3,667	263,208	11,663	105,624	3,661	31,756	6,344	83,045
April 25	3,581	3,506	257,073	10,535	102,897	3,267	29,240	6,869	81,107
May 30	3,877	3,522	255,023	10,478	95,355	3,034	31,384	6,993	79,628
June 27	3,719	3,581	253,364	10,713	88,396	3,549	32,851	6,615	77,304
July 25	3,691	3,658	249,262	10,864	82,281	3,647	35,966	6,796	77,816
August 29	3,964	3,697	249,007	11,300	80,831	3,850	42,060	6,875	78,034
September 26	3,909	3,802	242,785	10,954	80,550	4,215	45,954	7,094	78,943
October 31	3,901	3,731	239,266	11,153	79,159	.....	48,131	.....	79,166
November 28	3,878	3,736	234,850	11,269	78,854	.....	49,739	.....	77,796
1943:									
January 2	3,871	3,734	233,938	10,957	82,420	4,285	42,913	7,683	72,881
January 30	3,826	3,698	233,863	10,339	88,830	3,888	37,057	7,452	70,763
February 27	3,873	3,709	235,217	10,566	93,157	4,230	32,939	7,839	70,140
March 27	3,896	3,742	239,126	10,231	94,079	3,541	30,980	8,018	67,938
April 24	3,913	3,737	242,035	10,583	91,001	3,954	31,142	8,168	67,455
May 29	3,970	4,679	245,752	10,656	83,937	3,798	32,274	7,672	67,682
June 26	3,955	4,015	242,657	11,092	79,589	3,876	34,044	8,126	67,960
July 31	4,133	3,788	238,420	11,127	74,977	3,765	36,363	8,478	66,877
August 28	4,196	4,227	236,170	12,420	72,525	4,351	37,928	8,732	67,250
September 25	3,344	4,156	233,013	12,206	70,024	4,608	40,328	8,560	66,659
October 30	4,383	4,176	237,219	12,813	69,297	4,642	44,591	7,968	63,838
November 27	4,414	4,261	239,761	12,638	69,980	4,379	46,187	8,633	62,143
December 25	4,363	4,185	241,310	12,597	74,024	4,457	43,791	8,689	57,596
1944:									
January 1	4,357	[4]4,453	240,992	13,192	76,302	4,575	42,310	9,141	57,330
January 8	4,365	4,221	238,114	12,630	77,654	4,434	41,509	9,061	55,731
January 15, 1944	4,373	4,203	.....	12,682	78,405	4,231	39,099	8,459	54,529
January 16, 1943	3,850	3,640	232,191	10,726	84,955	3,986	39,841	7,470	71,798
Change:									
In week	+8	—18	.....	+52	+751	—203	—2,410	—602	—1,202
In year	+523	+563	.....	+1,956	—6,550	+245	—742	+989	—17,269
In year	+14.2%	+15.5%	.....	+18.2%	—7.7%	+6.1%	—1.9%	+13.3%	—24.1%

[1] All time peak. [2] Lowest since April, 1922. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent States. [4] Stocks, January 9, 1943.

line, Inc., delivers the West Texas oil into Pan-American Pipe Line Company's reversed line at Houston in reaching the Big-Inch at Longview, while the mixed grades of Southwest Texas oils are routed from Houston via Shell Pipe Line Corporation's line, and effective January 14 a daily movement of 6800 barrels started through Sinclair Refining Company's system from Houston via Huffman station to Smith's Bluff, thence via Atlantic Pipe Line Company to Longview.

Sun Pipe Line Company Plans Southwest Texas Lines

Sun Pipe Line Company has authorzied construction of 64 miles of oil lines in connecting a group of fields in Starr and Jim Hogg Counties, Southwest Texas, according to John G. Pew, assistant to the vice president. The company operates a gathering system in the Sun field, and will lay 24 miles of 4-inch to the East field, which will be the junction for a 15-mile 4-inch extension to the Weil field and a 12-mile 4-inch to the Guerra field. The entire gatherings will be routed through a 13.33-mile 6-inch, extending from Sun field to Kelsey, where connection will be made with Humple Pipe Line Company's system. Sun Pipe Line Company recently was denied material priorities that would permit installation of a 144-mile combination 8- and 6-inch trunk line from Harbor Island via the Seeligson district to the Starr County system. Sun Oil Company is currently producing 10,000 barrels daily that would be available to the proposed line, and materially added to its productive acreage in recent months.

Increased Demands Exhaust California Gas Supplies

Despite winter gas production on the Pacific Coast this year again breaking all records, the most critical shortage ever experienced in Southern California has developed.

The two principal suppliers of Southern California have given notice that all ordinary measures to avert a breakdown in supplies apparently have failed; and they warned that drastic measures now must be taken.

Appeal has been made to the public to cut use to the lowest possible minimum at once. Further warning is being given by mail and radio that it has been necessary to formulate plans for drastic compulsory reduction in supplies, if such should prove necessary to meet wartime emergency requirements.

Consumers are notified that the possible crises now being provided against shall be considered as Emergency A and Emergency B. Should the steps necessary to meet A be invoked, citizens will be asked to reduce time in use of furnace heaters to an absolute minimum; never to heat homes to more than 65 degrees and not to heat unused rooms at all; to substitute wood or coal fires wherever possible, and to turn off heaters whenever leaving the house, if only for an hour.

Emergency B would be a far more serious matter; and although it is deemed enough of a possibility to justify planning at this time, it is not believed resort to it ever will be necessary. If it should occur, the demand will be to turn off all gas appliances at once.

Plans are all formulated for the declaration of either emergency without further warning, in announcements by radio, in the press and through the mails. Even the scripts for radio announcements are already prepared; and have been placed in the proper hands.

The present crisis has resulted from incidence of a greater-than-usual winter rise in household demand with unanticipated heavy increase of demand for industrial use. Supplies to industries are being reduced sharply wherever not essential to war. Even the oil industry is feeling the pinch, gas fuel being denied drilling operations in numerous districts. In some cases operators were required to halt use of gas forthwith regardless of the status of drilling, and to make other provision for fuel.

Materials Relaxed for Indiana-Kentucky Section

Restrictions on the use of critical materials for drilling in the Cincinnati Arch-Nashville Dome in Indiana, Ohio, Kentucky and Tennessee were relaxed by PAW January 20 to permit operators freely to drill or deepen wells in the area to a depth not exceeding 1200 feet for those on 5-acre spacing and 1800 feet for those on 10-acre spacing.

The easing of the regulations, Deputy Administrator Davies said, will not involve any large amount of additional material because of the shallow depth of the wells and the expected use of a large proportion of second-hand material.

"It is not expected that the additional productive capacity to be gained by the additional drilling under the new order will be large," Davies explained, "but whatever added current production is obtained will help fill the pressing need for oil in the general area. It is because of this pressing need for oil that we wish to facilitate drilling in the area."

The area covered by the order includes 77 counties in Indiana, 49 in Ohio, 59 in Kentucky and 36 in Tennesee.

Sinclair Buys MacKinnie Holdings in Elk Basin

Sinclair Wyoming Oil Company has purchased properties of MacKinnie Oil & Drilling Company in the Elk Basin field and other districts of Wyoming. Consideration was $4.00 per share for 1,500,000 shares outstanding, a total of $6,000,000 of which $3.75 was paid and the balance of $0.25 per share to be paid after transfer of the company has been completed.

MacKinnie Oil & Drilling Company was organized in 1919. Its operations met with varying success until 1936 when James Donoghue of Denver became president, and important deep-sand discoveries were made at Lance Creek. The company was one of the first to develop the Tensleep sand at Elk Basin and its holdings there total 1800 acres.

Houston Nomads Elect New Officers

New officers were elected by the Houston Chapter of Nomads at an annual meeting held January 20. The new officers are, left to right, seated: W. J. Nutto, Reed Roller Bit Company, vice president; H. J. Craig, Baash-Ross Tool Company, president and regent; W. A. Davis, Baker Oil Tools Company, secretary-treasurer. Standing: H. E. Estes, Reed Roller Bit Company, assistant secretary-treasurer; Madden T. Works, Cameron Iron Works, assistant sergeant-at-arms; Gordon Richmond, Hughes Tool Company, regent; and O. D. Small, W-K-M Company, sergeant-at-arms. Not present in the picture is Robert Horton, Link-Belt Company, who was elected assistant secretary-treasurer.

International Developments

Active Exploration Is Under Way in Colombia

Active exploration campaigns are being pressed by several American companies operating in Colombia. The Texas Company has parties working in the Caqueta region of the Llanos; geologists of Socony-Vacuum Oil Company are making surface surveys from the coast as far eastward as the Cesar River, and north of El Banco; Tropical Oil Company is carrying on field studies in the area around San Pedro de Arimena; and Richmond Oil Company is detailing its Caraballo tract. Efforts are being made to obtain an ocean terminal at Santa Marta for the pipe line serving the Magdalena Department.

Rail Line Will Allow Development in Yucatan

It is expected that the known oil reserve areas on the Yucatan Peninsula will be effectively developed as a result of the completion of approximately 400 miles of railroad line by the summer of 1944. The work has been under way since 1936 along a route stretching from the southeastern part of the state of Vera Cruz to the town of Campeche. The states of Tabasco, Chiapas, Campeche, Yucatan and Quintana Roo will now get their first rail connections with Mexico City and the port of Vera Cruz.

Another 10,000-Barrel Well in Poza Rica Field

Petroleos Mexicanos has reported completion of another well in the Poza Rica field, with an initial production of 10,000 barrels daily, through small choke, and with typically high gas drive. The well may be presumed to be located as an outpost, northeast of the field proper. Trouble was encountered in putting the well down to the 3000-foot pay zone, more than 3 months being required to complete the hole.

Taber Field Extension Opens New Pay in Ellis

Extension of the Taber field, in Southern Alberta, and the opening of a new pay in the Ellis sand, is reported as a result of the completion of Mid-Continent Oil & Gas Corporation's No. 3, two miles south of previous production. This is the second of eight scheduled holes to be drilled in the outpost block controlled by several participating companies. The first test was an edge failure, furnishing structural control for selection of No. 3 location. This latter well was still coring in the Taber sand on January 14, with water-free oil rising 85 feet in the hole.

The first well established the presence of saturated sections in both the Taber and Ellis sands. The second well will test both sands, with production apparently assured. All other Taber field wells are producing from the Taber sand only. If higher gravity oil is found in the Ellis many nearby Taber wells may be deepened, since the field is at present shut down for lack of markets for the heavy oil produced from the Taber sand. Some relief is promised Taber operators, however, by the announcement last week that the Imperial refinery at Calgary has agreed to resume taking a small amount of the oil.

Rumanian Oil Industry Is Completely Unitized

Neutral correspondents in Rumania report that the Nazis have imposed the formation of an "association" of all drilling, producing and refining companies operating in that country. All assets, equipment and revenues have been pooled, under the management of a central group of the different company representatives, appointed by the Germans. The announced purpose of the association is to spread war damage losses pro rata among all companies, and to accomplish the most efficient use of all machinery, spare parts, drilling equipment, haulage facilities, etc. Profits of companies not reporting war damage are to be shared with those who have suffered or will suffer damage, according to the Nazi-controlled press.

Two Thirds of Alberta Activity in Turner Valley

At the end of the first week in January, 29 drilling operations were under way in the Province of Alberta with 20 of them in the Turner Valley field.

Seven wells were being tested in Turner Valley, and 3 in other Alberta fields. Wells finished during the week included 2 at Turner Valley, 2 in other areas. Three wells were put on production during the week, while two new wells were spudded. Average initial production of the three new producing wells was 105 barrels. Average daily production of all Alberta wells for the week was 22,887 barrels—up 2650 barrels over that of the previous week. Total number of wells producing in Alberta at the week's end was 229, all but 25 of which were in the Turner Valley field.

Large Saskatchewan Block to Be Tested

Norcanols Oil & Gas Company and Imperial Oil Company have announced location for the fifth well to be drilled in a 2.5 million acre block held by the two companies in southern Saskatchewan. The new test, Norcanols-Corinne 1, is 20 miles south of Regina.

Imperial owns a controlling interest in the Norcanols company, and a jointly-sponsored survey and development program has been carried on by them for the past 3 years and more within the area of their lease holdings.

Water Causing Trouble In Shell-Norman Test

Shell-Norman No. 1 well, in the Jumping Pound area, is waiting on cement, after a second plugging job to shut off strong sulphur water flows. The first was encountered in the upper porous zone, delaying a production test. The same kind of trouble seems to characterize tests of the middle porous zone, present hole bottom of the well. A promising section of the Blaimore formation was passed up in this well, but will be tested later.

New Caribbean Tanker Rates Listed by WSA

The U. S. War Shipping Administration, at the request of the petroleum supply committee for Latin America, has quoted rates and surcharges for tanker shipments of crude oil and refined products from Netherlands West Indies ports to Cuba and Central America, when transported by WSA-operated vessels.

As a basic index a price of 24.5 cents per barrel was set as the rate for cargoes originating at Aruba or Curacao and destined for delivery in Antilla or Puerto Manati, Cuba. Surcharge for such a voyage route mileage was set at 111 percent, with a further charge of 3 cents per barrel on cargoes loaded on a single vessel at both Aruba and Curacao. Comparable rates are to apply for shipments throughout the Caribbean area, but for full cargo movements only. Non-capacity shipments fall under a higher rate classification, according to the War Shipping Administration.

Production Declines for Year in New Zealand

Wells in New Zealand produced 77,716 barrels of oil in 1942, and considerably less than that amount in 1943, according to figures just released. The potential of the Moturoa field, controlled by the New Zealand Petroleum Company, is approximately 150 barrels per month. During 1942 several deep tests were drilled in wildcat territory, but none of them were successful. The deepest hole was abandoned at 10,925 feet. Exploratory work is still going forward on the island, in accordance with a schelude of exploration and development that was initiated in 1937.

Australia Expanding Shale Oil Industry

The Australian Commonwealth government is reported to be planning great expansion of the shale oil industry in the Glen Davis area, New South Wales, which produced 45,700 barrels of crude shale oil in 1942. Plans call for expansion of processing plant facilities calculated to boost the output by 14 times, to approximately 640,000 barrels per year. Total cost of the expansion project is figured at $2,656,800.00, according to studies made by the Committee on Public Works of the Commonwealth Parliament. Consultant experts have reported to the committee that the new plant design will make possible recovery of oil running as high as 68.2 gallons per ton of shale.

Canada Is Utilizing More Natural Gas

The Canadian Bureau of Statistics, Ottawa, reports that in the 10 months ending October 31, wells in the Dominion produced 34,993,634,000 cubic feet of natural gas that was actually utilized as pipe-line fuel, field fuel, or in recycling and repressuring operations. At the same time coal output in the Dominion was down 2½ percent as compared with the same period in 1942.

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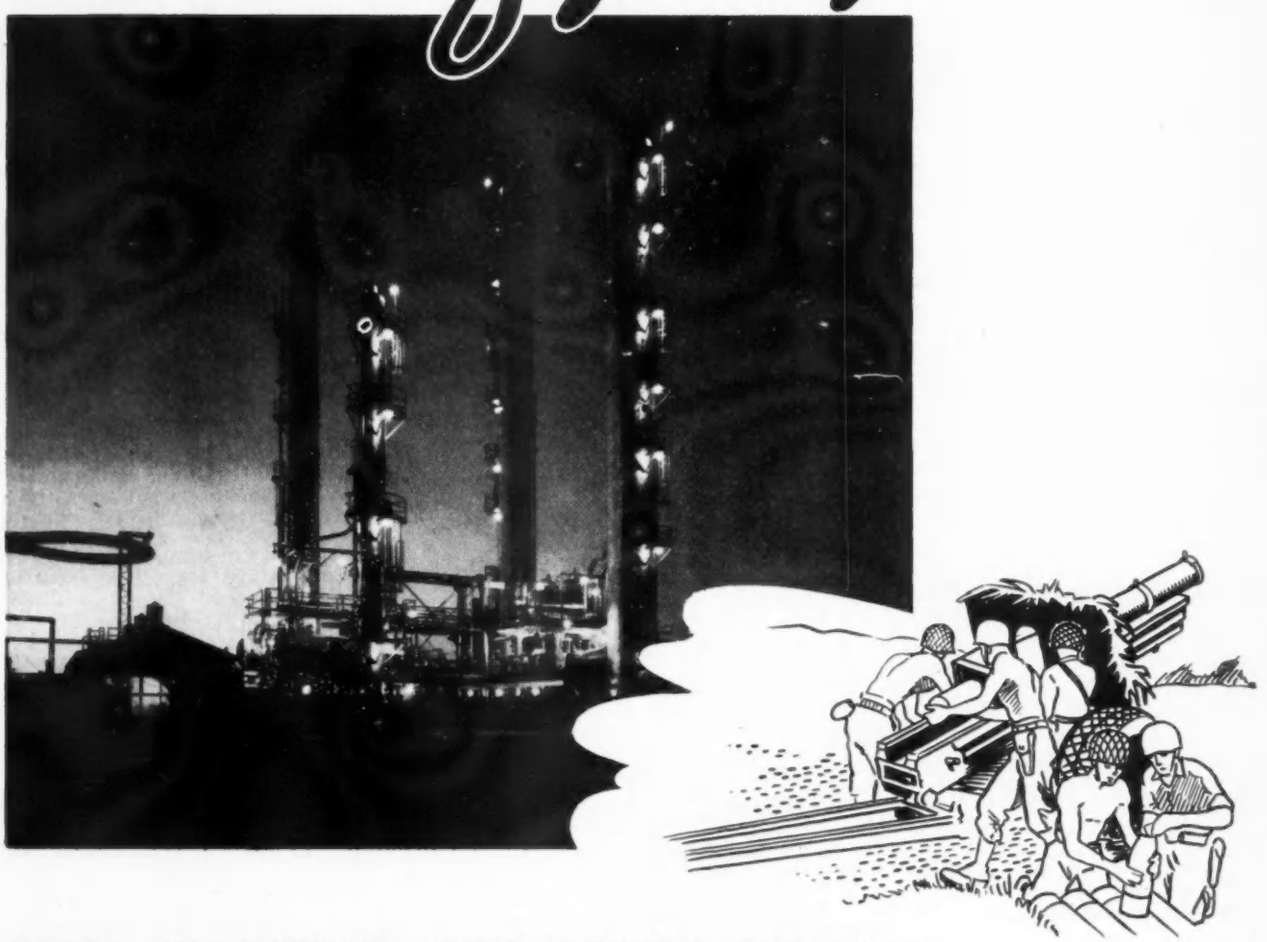

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U. S. Field Operations

Illinois

Marine Pool Wells Better to North

Oberling and associates' Becker-Pence 1, SE NE SE 9-4n-6w, in Madison County, highlighted in the oil news in Illinois this week. The northernmost well in the Marine pool, it flowed 290 barrels of oil in 9½ hours through casing from Devonian lime at 1688-93 feet. The well just south of it had a flow of 100 barrels, indicating the northward trend of the pool.

Jasper County: Continental Oil Company has set casing at Blair 1, SE NE NE 9-5n-9e, 2½ miles south of the Bogota pool, after a drill-stem test in McClosky lime at 3060-78 feet. The well is expected to make a small pump producer and open up a new area in Smallwood township west of the South Jasper pool.

Richland County: Two miles southwest of Wynoose, Eiser Oil Company is testing McClosky saturation at Wells 1, SW NW 29-2n-9e, a wildcat venture. Pay was found at 2057-60 feet with total depth of hole 3162 feet.

Cumberland County: Another wildcat venture in the much-tried Mattoon area is under way at F. D. Walker and associates' Shields 1, SE SE 21-10n-8e, southeast of the village of Trilla, an area favorably regarded on seismograph work. Rotary tools are being rigged for a test of McClosky lime expected near 2600 feet.

Indiana

Good Posey Discovery In Area of Dry Holes

Sells Petroleum Company and others' Wade 1, SE SW NE 14-5s-14w, Posey County, 1½ miles southeast of the South New Harmony pool has been completed as one of the best producers in the state in several months. However, as a discovery it is disappointing due to offset tests' failure. The well, upon completion in the Hardinsburg sand, pumped 300 barrels of oil and 15 barrels of water in 24 hours. Pay was topped at 2454 feet.

Sinclair Oil Company's south offset found the Hardinsburg sand dry and Mohawk Drilling Company's north offset found only an odor of oil in the discovery's pay sand. Both wells are drilling deeper.

Kansas

Two New Pools as Work Starts After Cold Spell

Coming out of the most severe cold spell of the year, Kansas operators proved two new fields. Atlantic Refining Company's Neil 1, SW SW NE 27-24-14w, Stafford County, is the first discovery of the week. Located four miles from Jordan production, the wildcat had a fill-up of 1550 feet of oil and some oil-cut mud on initial test in Arbuckle lime with tools open 30 minutes. Top of the lime was at 4230 feet. Previously, the well had shows in Viola lime, and while the latter were not given a thorough testing it is thought that the well might have completed in this formation.

Barton County: Plains Exploration Company's Murdy 1, SW SW NW 6-18-13w, just west of Hoisington and on the southwest flank of Central Kansas Uplift, found good porosity in Arbuckle lime from 3322 to 3325 feet. The formation was characterized as being porous and showing good saturation. Casing is being run for a test. In this area, shows of this nature denote a commercial well at completion. Lansing-Kansas City lime was also checked and while it showed staining throughout no test was made.

Reno County: Mid-Continent Petroleum Corporation's Murdy 1, CSE SW 11-24-9w, northwest of Morton pool, is a new location that may extend this production. Kansas City-Lansing, Simpson sands, Viola, Misener, Mississippi and Arbuckle are prospective pay horizons.

Stafford County: W. P. Faulkner's Cadman 1, wildcat at SE NW 4-25-13w, which has been showing as a prospective pool opener with oil in the hole from lime at 4063-4083 feet, is now fishing for casing.

Kentucky

Utley Pool Extension Well Makes Good Flow

Western Kentucky is witnessing the best discovery well completion in the state in several months. Basin drilling Company's Moore 1, 16-P-21, a half-mile northwest of the Utley pool, flowed 215 barrels of oil in four hours through tubing from McClosky lime pay at 2568-76 feet after 400 gallons of acid. Operators continue testing the well, which probably will be considered an extension of the Utley pool.

Oklahoma

Two Most Important Tests Are Reported Indecisive

Coring below 10,685 feet is being continued at Carter Oil Company's Cottingham 1, C SE SW 4-7n-3w, McClain County, a test of a deep-seated seismic high, one of a number of similar features paralleling Nemaha Ridge to the west where the strata dip into Anadarko Basin. On an earlier core taken from 10,670 to 10,681 feet, a 9-foot recovery was obtained that showed medium grained sand, slightly shaly, salty to the taste. The core also showed slight oil staining in thin streaks. The sand has been identified as second Wilcox (Ordovician) and unlike this sand in wells drilled in this vicinity, it is soft rather than hard and tight. The above core was the seventh taken in this possible pay horizon, the previous ones showing both staining and some saturation. No tests have been attempted.

Carter Oil Company's Johnson Ranch 1, CSW NE 13-8n-4w, McClain County, is drilling below 9814 feet in Hunton lime. A test of the upper section of the lime showed some staining but deeper cores in the same formation failed to support the first favorable showing. Wilcox sand is the ultimate objective for this well.

Cleveland County: Two tests are nearing critical depths on the recently proven seismic structure now called West Moore. Both wells are being drilled by Mid-Continent Petroleum Corporation, discoverer of the field. Tubbs 1, NE SW SE 29-10n-3w is drilling below 6400 feet, and Harris 2, NE NE SW 29-10-3w, is below 4400 feet. The wells are east and north offsets, the latter by 40 acres, of the discovery and their completion will do much toward providing a key to the importance of the strike.

Oklahoma County: West Edmond field continues to attract attention as five new tests get under way. The field has also been extended into Canadian County to the west at Dickey Oil Company's Young 1, CSE NE 25-14-5w. While the well has not been completed, nor a complete test made, it had good saturation in Hunton lime despite the fact that it was somewhat lower than producers in the field.

West Texas

Two Confirmation Tests In Winkler County

Magnolia Petroleum Company's State-Walton 21, ¾-mile southeast of its Kermit-Ellenburger discovery, the first of a trio of deep strikes given Winkler County last year, flowed gas, distillate and drilling fluid when tester was used at 10,580 to 10,625 feet in Ellenburger, topped at 10,581 feet. This confirmation test entered the dolomite 136 feet low, and will core to the oil horizon. The discovery logged 180 feet of gas-distillate bearing formation before entering the oil zone at 10,640 feet, then cored to 10,774 feet before entering water near bottom.

The company's Walter 234, ¾-mile northwest of the discovery, was drilling gray lime at 8876 feet. These confirmation tests were started May 20 and June 17, respectively.

In the nearby Keystone-Ellenburger field, which occupies a higher structural position, Sinclair Prairie Oil Company's Walter 4-A was drilling shale at 8888 feet. Amon Carter and Pure Oil Company's Walter 3-C, deepest of a trio of Ellenburger tests on their discovery tract, was drilling at 8645 feet. Stanolind Oil & Gas Company and Shell Oil Company's Wheeler-Sun 1-A, deepest of four tests near the Wheeler-Ellenburger pool, was drilling at 9602 feet.

Wildcats: Humble Oil & Refining Company's Barnes 1, Pecos County, flowed water when tested through perforations at 4340-90 feet in Ellenburger,

topped at 4340 feet and will be abandoned, and the company's Sawyer 2-B, Irion County, was drilling at 9175 feet in Ellenburger, topped at 8960 feet with elevation of 2372 feet. Drill-stem test at 9172 feet proved dry.

Bryce McCandless et al's Cordova-Gulf 1-10, Pecos County wildcat, abandoned at 4878 feet in granite. In Schleicher County, Phillips Petroleum Company's Callan 1 entered Ellenburger near the 4600-foot level, and was drilling dry dolomite at 5445 feet. Failures were also listed for Lamb and Hockley Counties.

Hale County: Amerada Petroleum Corporation's Kurfees 1, situated in south portion of the Palo Duro Basin, was making drill stem test after perforating with 197 shots at 9870-9922 feet, near the Pennsylvanian-Mississippian contact. This wildcat offers the most favorable outlook for deep production between the Permian Basin and Texas Panhandle, and is bottomed in black granite at 10,250 feet, with 5½-inch cemented at 10,051 feet. The best porosity and saturation was logged at 9780-9840 feet, which will also be tested, while nominal gas shows were passed up in drilling the Pennsylvanian section, topped at 5860 feet with elevation of 3308 feet. Base of Mississippian was called at 10,093 feet. Kurfees 1 is 33 miles northeast of an inactive pumping discovery in Lubbock County, and 12¾ miles north of Humble et al's Byrd 1, which was abandoned in granite at 6760 feet with elevation of 3251 feet. The latter is situated on top of the Matador uplift, which extends east-west across the plains country.

Hockley County: Woodley Petroleum Company's Harless-Stanolind 1, first Clear Fork production for the county and 21 miles northeast of the Slaughter field, nearest production, pumped 161 barrels of 26-gravity oil initial after acidizing broken pay at 5917-80 feet.

Reagan County: Amerada Petroleum Corporation's Johnson 2, HE&WT 5, 2655 feet east of the most northerly producer in the Barnhart field, passed up the first oil zone in Ellenburger at 8957-9020 feet and landed 5½-inch 7 feet off bottom at 9085 feet. It will be completed through perforations. This outpost logged base of black shale at 8940 feet with elevation of 2725 feet, or 141 feet low. The company's Hickman 1-A, ½-mile northwest of production, was drilling at 9223 feet to try for the lower pay after passing up production at 8938-94 feet with elevation of 2779 feet. Location for Hickman 2-A has been changed to C SE SE T&P 233, and Hickman 3 is a new west outpost location, being ½-mile west of production.

Superior Oil Company, Pete Wiggins and Ed. Hyde's University 1-A, Reagan County wildcat, 2½ miles northwest of the Grayson pool, cemented 7⅝-inch at 3141 feet to test and acidize a 14-foot zone of oil-saturated lime encountered in drilling to 3175 feet with elevation of 2933 feet. The partnership is obligated to drill a 9000-foot Ordovician test on an adjoining block of 4040 acres that was purchased last December from the University of Texas Lands.

Reeves County: Standard Oil Company of Texas' Keasler 1, Hermosa prospect, abandoned in hard lime at 8916 feet after exploring the Bone Springs, or Basal Permian without shows. This wildcat entered the Delaware at 3877 feet. The company holds lease on 96,000 acres in Reeves County, and has 2 small pumpers in process of completion from the Delaware on its Orla prospect.

Prospects: Seaboard Oil Company's Spraberry 1, Dawson County wildcat that has showed 37-gravity oil from several horizons in the Clear Fork below 6630 feet, will drill out plugs to bottom at 7677 feet and set liner then try for completion through perforations. Gulf Oil Corporation's Dean 1, Eastern Dawson County, was idle in unidentified lime at 10,457 feet.

North Texas

Hildreth Productive Area Extended Quarter East

The productive limits of the Hildreth field, Montague County, have been expanded to 2¼ miles east and west, and the outlook is bright for an equal length in north and south. Continental Oil Company's Middleton 1, NW NW NE ET Ry 55, provided a ¼-mile east extension in flowing oil from Bend when tester was used at 6165-6210 feet and again at 6196-6215 feet. This outpost was drilling at 6346 feet and may explore the Simpson pay before running pipe. An important west extension was confirmed when the company's Coffield 1, NE SE SW Section 52, flowed 199 barrels of oil through 1-inch on 12-hour test through perforations at 6240-50 feet in Bend, topped at 6026 feet. The best pay at 6085-6113 feet has not been tapped. The favorable structural position of this outpost enhances the production outlook for C. H. Murdick et al's Walthall 1, situated 2700 feet west by south and drilling shale at 5710 feet.

King County: Humble Oil & Refining Company's Bateman 3, two locations northwest of its Bateman pool discovery, the only producer in the county, failed to attain water shutoff in the 3600-foot lime, and will be deepened to the Ordovician. Bateman 2 also developed water trouble after showing for a pumper before acidizing.

Cooke County: Nominal east and northeast extensions for the prolific Winger sand section of the Walnut Bend field have been assured by Carter-Gregg Oil Company, but both outposts recorded structural dip. Green 1, east offset to production and in NWc Section 79, entered Winger saturation at 5573 feet, or 19 feet low, and halted at 5589 feet to complete through perforations. The company's Ramsey-Ohio 3, was perforating Winger sand at 5543-84 feet with pipe on bottom at 5594 feet. Northern Ordnance, Inc.'s Davis-Haney 1, 1¼ miles east by north of Woodbine, logged broken saturation in Strawn sand at 3428-41 feet and in top of sand at 3540-72 feet. This wildcat was drilling shale at 3820 feet, with a 6000-foot depth contract. Phillips Petroleum Company et al's Dangelmayer 2, 800 feet northwest of their Dangle pool Ellenburger discovery, entered Ellenburger at 2308 feet, or 43 feet low, and set pipe at 2310 feet, 5 feet off bottom.

Clay County: Continental Oil Company et al's Ross 12, east outpost for the Ross 5300-foot Bend lime field, was awaiting production gauge after swabbing 16 barrels of oil hourly from Strawn sand at 4046-58 feet. It is ¼-mile east of the partnership's Ross 11, which made a pumper from perforations at 4050-59 feet after original completion in Bend. This upper pay is confined to the flanks of the structure.

East Texas

Second Deep Oil Strike Seen for Smith County

Smith County has a second prospective deep oil strike in the basin that sweeps west from the East Texas Field. Phillips Petroleum Company's McMinn 1, M. M. Long Survey, 6 miles south of Tyler, was showing considerable 25-gravity oil in returns while conditioning hole at 8060 feet to run electrical formation survey. The oil is credited with coming from broken saturation at 7972-8000 feet in Upper Glen Rose, topped at 7765 feet with elevation of 478 feet. This horizon is not productive elsewhere in the district, and the next possible pay would be the Rodessa. Operations may be halted to complete title work on the supporting block.

Skelly Oil Company's Chisum 1, 6 miles north of Tyler and the probable discovery for the Sand Flat structure, eliminated two zones in the Pettit for production, although acid treatment and swabbing failed to yield water. Production test was underway after perforating at 9280-9307 feet in Rodessa topped at 9033 feet. Other prospective oil zones to be tested are at 9232-43 feet, and the Paluxy at 6944-7012 feet. The latter's producing ability was confirmed by drill-stem test. Skelly Oil Company has applied for permit to dual-complete this discovery.

Sun Oil Company's Patterson 1, 3700 feet west, was coring for Paluxy at 7174 feet, having entered Goodland at 7009 feet with elevation of 509 feet, being 94 feet low. Arkansas Fuel Oil Company's Marsh 1, southeast outpost, occupies the highest structural position having entered Georgetown between 5570 and 5600 feet with elevation of 417 feet, and was drilling lime at 5915 feet.

Smackover Tests: A. G. Hill et al's Anderson 1, Robertson County wildcat on the Calvert faulted structure, entered Cotton Valley, first Pre-Trinity beds, at 8700-20 feet, according to sample, and was drilling dry sandy-shale at 8872 feet. This isolated prospect entered Travis Peak at 7006-37 feet after cutting a fault with a 1250-foot throw. In Hunt County, Humble Oil & Refining Company's Norman 1 was drilling at 6460 feet, and its Hague 1, Franklin County, was drilling hard sandstone at 9530 feet with top of Cotton Valley called at 8730 feet, while its Wright 1 Morris County, was drilling shale and anhydrite at 11,420 feet. The latter entered Buckner at 10,285 feet. In Bowie County, Barnsdall Oil Company's Heilborn 1, 2 miles southwest of Elam, was drilling at 7650 feet in Buckner, topped at 7470 feet.

Van Zandt County: Delta Drilling Company et al's Gipson-Echols 1, 3 miles northwest of Grand Saline, abandoned in barren Travis Peak at 8845-9012 feet.

Nacogdoches County: F. K. Lytle et al's Jas. R. Summers 1, J. Reid survey, 5 miles north of Nacogdoches, is scheduled to drill to 9000 feet, or Travis Peak. The Texas Company's Pruitt 1, 4000 feet west of the company's abandoned gas-distillate producer in Travis Peak at 8610-60 feet, was drilling hard lime at 8650 feet, having entered Pettit between 7910-25 feet with elevation of 365 feet, about level with the first test of the block.

Southwest Texas

Several New Wildcats In Lower Coastal Area

Drilling and the staking of new wildcats continue to show a sharp gain throughout the lower coastal area. A number of wells are making production tests, some of which are resulting in the opening of new fields.

Hewit & Dougherty are making a flow test in Dodson 1, wildcat in Bluntzer area of Nueces County 5½ miles northeast of Richard King field. Sand with oil odor was found at 5234-43 feet, electrical survey was run to 6252 feet, total depth, and 5½-inch casing was cemented at 6020 feet.

Also in Nueces County one mile east of Aqua Dulce field, Simmonds & Perry have completed Simmonds & Perry 2. Perforated at 7332-35 feet, the well flowed 128 barrels net oil through ⅛-inch choke. Sand was topped at 7318 feet, total depth being 7406 feet. The well, which is in NW SW section 2, Puenticitas Grant, is one-half mile from nearest gas-condensate production.

Jim Wells County: Humble Oil & Refining Company has set casing and is preparing to make flow test in Longoria 1, semi-wildcat one-half mile south of production at North Magnolia City and 8300 feet southwest of Humble's Evetts 1 discovery. Casing was cemented at total depth of 6365 feet in sandy shale after logging oil sand around 5250-foot level.

Wildcats: Sun Oil Company has its Santa Rosa 1 projected to 11,500 feet 8 miles southeast of Raymondville in Willacy County. It is on a 10,088-acre lease in Santa Rosa subdivision of share 44, San Juan Carricitos grant. Another deep wildcat is planned northeast of Luby field in Nueces County by Seaboard Oil Company in Luby 52, a projected 10,000-foot test.

Texas Gulf Coast

Two Colorado County Wildcats Making Tests

The Wilcox trend in Colorado County is in the drilling and development spotlight with production casing set in two wells and tests scheduled to be made soon. Ohio Oil Company is preparing to make a flow test in McDermott 1, Cockfield test in Section 792, AB&M survey, 5 miles southwest of Garwood townsite. Total depth is 7087 feet with 5½-inch casing set to 6853 feet. Cockfield sand showed gas and condensate below 6500 feet.

Jack Frazier and Cities Service Oil Company's Gay 1, deep Wilcox test 3 miles northwest of Columbus, is bottomed at 8037 feet and 5½-inch casing set on bottom. Sands show gas-condensate production at 6775-6800 feet, 6855-70 feet and 7850-56 feet.

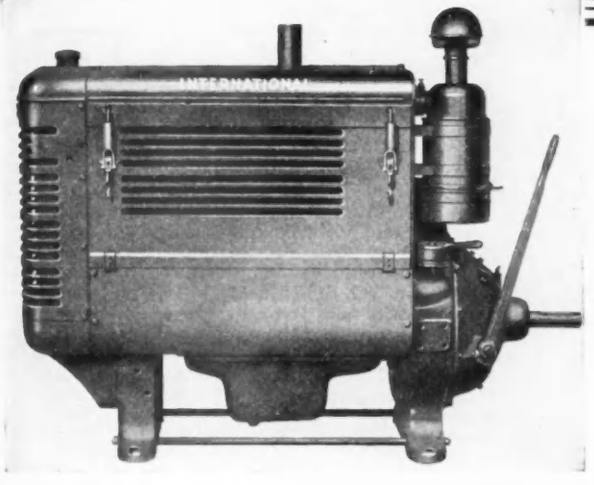
Sinclair-Prairie Oil Company is drilling two wildcats in the county, Glasscock 1, some 4 miles north of Rock Island in Louis Henry survey, making hole below 8500 feet; and Thompson 1, Charles Fritsche survey, 9 miles northeast of Columbus, drilling below 7500 feet.

Also on the Wilcox trend in the Rockland area of Tyler County, Humble Oil & Refining Company is preparing to drill a second deep Wilcox test northeast of its recent shallow discovery in the 3400-foot horizon. The second test is Kountze 1-B on a 3009-acre lease in Emily Smyth survey and is a proposed 4000-foot test. The company recently completed the Kountze 1-A in perforations at 3415-33 feet for a flow of 23 barrels daily through ⅛-inch and ¼-inch chokes.

A major extension to Fig Ridge production in Chambers County is indicated with Sun Oil Company setting casing in Federal Land Bank 1, Section 81, T&NO survey, north of the producing belt. The well is bottomed at 8633 feet and 5½-inch casing is set on bottom for completion in regular field sand.

Montgomery County: Superior Oil Company of California has triple completed another Wilcox well at Lake Creek, the second for the field. The company's McWhorter 6-A tested a new and unclassified sand but was shut-in after topping Wilcox at 8465 feet and drilling to 11,240 feet. The "A" sand was perforated at 9206-30 feet and flowed 113 barrels of condensate and 1,254,000 cubic feet of gas daily through ¼-inch choke through annular space between 5-inch casing and 2½-inch tubing. The "B" sand was perforated at 9730-58 feet and flowed 192 barrels of condensate and 2,050,000 cubic feet of gas through ¼-inch choke through tubing. The unnamed sand was perforated at 8798-8808 feet and was tested and shut-in.

Outpost: Sun Oil Company has projected a northwest outpost to the Stowell field in Chambers County in Green 1, lot 88, Koch subdivision of F, Valmore league.



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South Louisiana

Drilling Increases as New Wildcats Projected

Drilling and completion activities are showing some increase in the coastal belt with the number of new wildcat tests expected to increase within the next two months.

An area of interest is Laurel Ridge in Iberville Parish where Humble Oil & Refining Company has set production casing in a wildcat and announced location for a second well. Federal 1, Section 1-11s-13e, set 5½-inch casing to around 10,900 feet and is now drilling below 11,000 feet. Several shows were reported. The second deep test is Hymel 1, in Section 91-10s-13e.

Acadia Parish: Sun Oil Company has completed a major northeast extension to the Egan field with Trimble 1, Section 31-9s-1w, perforated at 10,480-500 feet and flowing 88 barrels of condensate daily through 3/16-inch choke with tubing pressure mounting to 3600 pounds. Total depth is 10,500 feet with 5½-inch liner setting on bottom. This is the second well in the field.

St. Landry Parish: In Krotz Springs area Gulf Refining Company has indicated strong production in its Haas-Hirsch 1, which was reperforated at 9418-22 feet and flowed 300 barrels daily through 5/32-inch choke with tubing pressure mounting to 2300 pounds. Hole is bottomed at 12,298 feet after topping Wilcox pay at 12,006 feet.

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Wildcats: Continental Oil Company and Standard Oil Company of Kansas are preparing to drill a deep test on flank of St. Martinville dome in St. Martin Parish. It is Standard's Fee 1, in Section 137-10s-6e, which has been pending for some time.

East Moss Lake area of Calcasieu Parish will be tested again with Continental Oil Company preparing to drill a deep test in Prairie Land and Canal 1 in Section 2-11s-9w. Sugarfield Oil Company has staked an outpost to the recently discovered Hope Villa field in East Baton Rouge Parish. It is Evans 1, in Section 49-8s-3e, and will be a 10,500-foot test. The company recently drilled a dry hole deeper to open the pool, formerly called the Rosedale prospect.

St. James Parish: Areas in St. James Parish are getting a play with more wells slated to be drilled. George Echols, Houston operator, is preparing to drill a 10,500-foot test in Realty Operators 4 in Vacherie area located in Section 13-12s-17e.

In the Hester area of the same parish, Humble Oil & Refining Company is preparing to drill Colonial Sugars 3, Section 17-11s-4e, a deep test.

Arkansas

First New Oil Pool of Year Offset by Failures

Abandonment of two wildcats and failure of two other wells in proven areas last week served to offset the good news of what looks like the first new oil pool for Arkansas this year.

Union County: Probably the keenest disappointment was centered in the failure of Lion Oil Refining Company's Union Sawmill 1, C NE NE SW 23-18-12, 1½ miles southwest of the New London field. The well was abandoned at 6275 feet after hitting water in the oolitic lime. Plans to test at the Cotton Valley level were discontinued.

Lafayette County: The first wildcat failure here for some time resulted in the abandonment of Kerlyn Oil Company's International Paper Company 1, C NW SW NW 19-19-24, at 6602 feet.

Miller County: Waldo Lumber Company abandoned Grace 1, C NW NE 9-15-27, after drilling to 6465 feet.

Nevada County: Berry Asphalt Company abandoned Arrington 1, C NW SW NW 13-14-20 in the Troy field at 2200 feet.

Columbia County: Only one producer was added in the state, in the Stephens-Smart field, with completion of S. A. Kinard and associates' Cooke 1, C NW NE SW 27-16-18. The well is good for 50 barrels a day on a ½-inch choke, and is producing from 1613 feet.

Chicot County: Placid Oil Company has announced the start of two wildcat operations some distance from its first well in this county which was abandoned several months ago. The company has located Roy Mathor 1, NWc 21-18-2, and Coleman 1, NEc 22-18-3.

The Dorcheat - Macedonia area was closed down for three days last week when Phillips Petroleum Company's McWilliams 1, C N½ SE 13-18s-22w, blew out and ran wild. It was finally placed under control after flowing at the rate of 300 barrels of distillate and 3 million cubic feet of gas per day. The well is now being worked over.

North Louisiana

80-Acre Spacing Ordered For North Carterville Area

An 80-acre spacing rule has been established by the Louisiana Conservation Commission in Bossier Parish's North Carterville field along the Arkansas border. Hunt Oil Company, field discoverer, has four producers and Shell Oil Company one producer in the area. Production is from the Pettit sand at around 6000 feet. The larger spacing rule was adopted due to limited lifting energy and the reports from producing wells that recovery of oil per acre does not justify closer spacing.

Exploration of the Pettit zone in that area, launched with the North Carterville discovery, has continued for over a year, the latest wildcat being J. R. Hayden's Ellerbe 1, SW NE 3-20n-13w, which is scheduled for 6000 feet.

Bienville Parish: Placid Oil Company now has 4 wells shut in in the Lucky area, each credited with having tested as gas producers. The wells are Nebo 1, 11-15n-7w, a discovery closed in after producing 24,000 gas from 6823-60 feet; Nebo B-1, 13-15n-7w, producing from 7024-48 feet without gauge; the Southern Advance-Hodge Hunt 1, 16-15n-6w, producing from the 6966-7008 horizon, without gauge; and Nebo A-2, 5-15n-6w, producing from 7864-7916 with no gauge.

Tensas Parish: A new wildcat has been located north of the Holly Ridge area and west of the recent Wilcox discovery, Arkansas Fuel Oil Company's Gibson 1, SE NW SW 7-11n-10e. It is east of Chicago Mill & Lumber Company's Mutual 1, NE SE 12-11n-9e, which was shut in after failing in the deep Tuscaloosa.

Mississippi

Gulf Gets Producer Near Eucutta, Wayne County

Gulf Refining Company's Morrison 1, SW SE 30-1n-13e, 13 miles northeast of Laurel and 9 miles from the Eucutta field, at 4900 feet showed on drill stem test 870 feet of fluid in 15 minutes through ¼- and ⅛-inch chokes. Most of the fluid was 25-gravity oil and there was no salt water.

Other Mississippi fields developed during 1943 were the Cranfield field in Adams county, where there are two producers and two wells drilling; the Eucutta field in Wayne with two producers and two drilling; the Flora field in Madison County with two producers and other wells projected and the Brookhaven field with one producer.

California

Drilling Peak in Prospect As 203 Rigs Kept Busy

The record-breaking total of 203 rigs, practically every serviceable outfit in the state for which crews could be found, were in operation at the start of this week, according to the tally of an industry survey. This means that although more wells were drilled in 1943 than ever before in a single year, the peak of drilling activity still has not been reached.

The week's news from the wildcatting

front is rather barren, with no shows of significance to offset failures represented by quite a few abandonments. Wildcatting, however, is on the increase as indicated by eight new starts announced this week. Five of the total are in Kern County, distributed between areas adjacent to Kern River, Ten Sections and Mountain View fields and Stockdale.

Los Angeles County: Further deep prospecting under the old Signal Hill field will be discouraged by unsuccessful results from The Texas Company's test in the De Soto sand, bottomed at 10,324 feet. The wildcat, Fields 1, first deep try on the north side of a main fault that splits the field, found the objective De Soto at the level expected, but the sands proved too tight to give up commercial production, yielding on test only 5 to 10 barrels.

Kern County: Sharing the secrecy that currently shrouds much of what goes on around Elk Hills Naval Reserve areas, Pacific Western Oil Corporation's 10,500-foot test about a mile out of Tupman, has been hung up without announcement of what was found. Speculation as to rumors of showings continue because the derrick was left standing.

A Paloma area extension appears to be in the making with the coring of some 40 feet of good-looking sand in the Symons zone, in Western Gulf Oil Company's Symons 31-7, 7-32-27, now being cored below 11,500 feet. Western Gulf Oil Company, The Texas Company, Kern County Land Company and Los Angeles Athletic Club would be chief beneficiaries from the sizeable widening of production limits now indicated as a possibility.

Madera County: Prospecting in the effort further to extend natural gas fields in the Gill area has been programmed both by Shell Oil Company and The Texas Company; and the latter started a new test this week, Gill 61-20, a mile south of its last discovery.

Ventura County: An area three miles north of Simi is scheduled for a very thorough test by Standard Oil Company. Eocene as well as Vaqueros and Sespe sands are to be examined underlying a considerable area. The company took over 800 acres of leases in Township 3, Range 18.

Michigan

Acid Treatment Makes Well South of Wise Pool

Completion of a Basin wildcat for a good producer by acid treating saved an otherwise dull week. Cities Service Oil Company's Methner 1, Section 33-16n-3w, Isabella County, flowed 303 barrels in 18 hours from Dundee lime at 3691-97 feet after a 1000 gallon treatment. Probably a pump will be set, however, as the well was heading up at the end of the initial test.

Located a mile south of the old Wise pool, the discovery is not generally rated as the opener of a big area.

☆

H. DARWIN KIRK, general counsel for Barnsdall Oil Company, Tulsa, has been elected president of Osage Oil and Gas Lessees Association, succeeding W. O. Beall, deceased. G. W. Davis, Shell Oil Company, was elected vice president, and Clarel B. Mapes was elected secretary-treasurer.

Rocky Mountain Area

Garland Test Reaches Tensleep at 4280 Feet

General Petroleum Corporation's Howell 1, Lot 63, 32-56n-97w, important test for possibilities of Tensleep production down structure on the vast Garland anticline, Big Horn and Park Counties, Wyoming, is reported in the Tensleep at 4280 feet with 33 feet of saturation in the Embar at 4217-50 feet, top at 4162 feet. The well is estimated to be running 200 feet lower than a well drilled a few years ago by Kinney Coastal Oil Company which made a small oil well in the Tensleep with considerable gas volume. General Petroleum's test is 3½ miles southeast of the Kinney Coastal well and lower on the structure.

The Garland field has a considerable gas cap in the Tensleep zone and wells drilled at Garland are carried through the Tensleep gas and into the Madison lime where crude oil production is developed.

Approximately 2000 acres are embraced within the developed area of the Garland field to the Madison lime and which contains the gas cap covering the Tensleep zone, while the entire structure including the several fault block zones through the northwest portion of the structure and elsewhere on the flanks of the field embrace some 15,000 acres. Garland is one of the largest structures in Wyoming.

Lance Creek: Superior Oil Company of California's Ong 1, C SE SW 31-36n-65w, Wyoming wildcat exploring possibilities of a fault trap accumulation of oil on the northwest flank of the Lance Creek field, encountered water in the Basal Sundance and Leo, and is preparing to plug back from 10,910 feet to test the Dakota sand at 8762-8770 feet, the upper part of which showed oil stains and the last two feet oil saturation. The Dakota sand ran approximately 5500 feet lower than found in the Lance Creek field south of the fault. This well has established a depth record for the Rocky Mountain area.

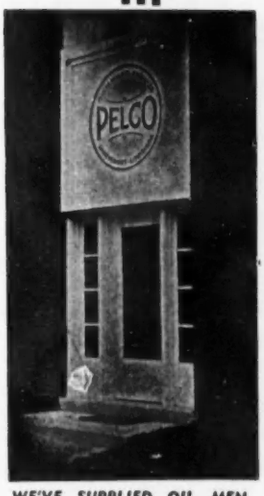
Elk Basin: Three Tensleep wells were completed at Elk Basin in the Big Horn Basin, keeping its record of no failures in the Tensleep pay intact with a total of 25 wells completed since discovery in December, 1942. Best of the new wells is Continental Oil Company's Elk 2, 103, SW SW NE 24-58n-98w, which flowed 2256 barrels of oil through 2½-inch tubing in Tensleep sand at 4285-4483 feet with 7-inch production string cemented at 4422 feet with 240 sacks at the shoe and 160 sacks through the cellar. Ohio Oil Company completed Elk 27, SW SE 24-58n-100w, for 1536 barrels initially flowing from Tensleep sand at 4546-4703 feet, and Stanolind Oil & Gas Company's Elk 5, 22TP, NE NW NW 30-58n-99w, flowed 1560 barrels from the Tensleep at 4228 feet, producing through casing and tubing with ¾-inch choke.

☆

EARLY C. PERRY, JR., former scout for Sinclair Prairie Oil Company in East Texas, died January 1 from wounds received while on a combat mission in the Air Corps in the Asiatic war theater.

A Gleam of Hope

That New Deal social security from the cradle to the grave is an insult to ambitious, intelligent men and a fatal sedative to all others doesn't keep it from being the most powerful political claptrap ever conceived. As every business man knows, only risk can provide security. For instance, before a workman can have a job, risk money for $5,000.00 worth of equipment must be invested. Men risk money for gain, but the possibility of gain is now penurious. We see one gleam of hope. With millions making out returns so complicated no living man understands the rules, tax law revisions are likely. With victory now assured and elections forthcoming, such revisions could, possibly, be sufficiently constructive to allow free private enterprise to survive. As for ourselves, we would like that. It has been pleasant these 36 years. A great many men have come to TRY PELCO FIRST.



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ARKANSAS

Columbia County—Haynesville: Mid-States Oil Co.'s Waller Heirs 1, c sw nw 2-20-20, pay 5480 ft, perf 120 shots 5483-98 ft, 815 bbls, 32/64-in, td 5569 ft.

Sohio Petroleum Co.'s Grayson 1, ne ne 3-20-20, pay 5502 ft, perf 69 shots 5504-15 ft, 960 bbls, td 5590 ft.

Columbia County—Dorcheat-Macedonia: Placid Oil Co.'s Whitlow Wise 1, s½ sw 21-18-21, lime 8900 ft, dual comp, perf 60 shots 8910-19 ft, 60 bbls; sandstone oil 7200 ft, 259 bbls, 3/16-in, td 8961 ft.

Miller County: Waldo Lumber Co.'s Grace 1, c ne ne 9-15-27, abnd.

Ouachita County: S. A. Kinard et al's Cooke 1, c nw ne sw 27-15-18, flow 50 bbls, ½-in, td 1616 ft.

Nevada County: Berry Asphalt Co.'s H. L. Arrington 1, c ne sw nw 13-14-20, abnd 1350 ft.

ARKANSAS WILDCATS

Lafayette County—Failure: Kerlyn Oil Co.'s International Paper Co. 1, c nw sw nw 19-19-24, abnd 6602 ft.

Union County—Failure: Lion Oil Refining Co.'s Union Sawmill 1, c ne ne sw 23-18-12, abnd 6275 ft.

CALIFORNIA

Fresno County—Coalinga: Standard's 66-3C, se sw ne 3-20-15, pump 97 bbls, 158 ft perf 3140 ft, td 3185 ft, pb 3145 ft.

Westates Pet. Corp.'s Commercial 25, sw ne ne 3-19-15 pump est 50 bbls 14-gr oil, 15 wtr, Kreyenhagen 1728 ft, td 1732 ft.

Kern County—Belridge, South: Belridge Oil Co.'s 31A-34, nw ne nw 34-28-21, pump 35 bbls 13.8-gr oil, 10 wtr, 96 ft perf 1110 ft, td 1320 ft, pb 1110 ft.

Belridge Oil Co.'s 52A-34, sw nw ne 34-28-21, pump 35 bbls, 122 ft perf 1153 ft, td 1325 ft, pb 1153 ft.

Chanslor Canfield Midway Oil Co.'s B. F. 11-16, nw se sw 11-29-21, pump 30 bbls 14-gr, perf 1253-48, 1130-25 ft, td 1300 ft, pb 1280 ft.

General Petroleum's 46-2, ne sw ne 2-29-21, pump no est, 188 ft perf 1059 ft, td 1060 ft.

Shell's T.W.A. 12, ne se sw 1-29-21, pump 42 bbls, perf 1144-25, 1087-25, 1012-942 ft, td 1145 ft.

Kern County — Buena Vista Hills: Union's McLeod 19, ne sw ne 34-31-23, pump 13 bbls 16.5-gr oil, 200 wtr, td 4541 ft, pb 4163 ft.

Kern County—Greeley: Standard's KCL 12-18, sw sw nw 30-29-26, sand and shale, abnd 9350 ft.

Superior's Lewis 4, ne nw nw 12-29-25, flow 2016 bbls 38-gr oil, 820,000 gas, 48/64-in, 585/0 lbs, perf 11,495-90; 11,486-51 ft, 2½-in at 11,330 ft, Rio Bravo 11,443 ft, td 11,500 ft.

Kern County—Kern Front: Standard's 9-6-27, sw se ne 27-28-27, pump 125 bbls 13.9-gr oil, 14 wtr, 247 ft perf 2478 ft, td 2615 ft, pb 2480 ft.

Kern County—Kern River: (Old well redrilled) Tide Water's San Joaquin 47, 5-29-28, pump 25 bbls 13-gr oil, 4 wtr, otd 1060 ft, redrilled to 1060 ft.

Kern County—Kettleman North Dome: (Old well redrilled) Standard's 4-29J, 29-21-17, gas lift 196 bbls 32.3-gr oil, 301,000 gas, 110/305 lbs, perf 8480-8160 ft, otd 8518 ft, redrilled to 7900 ft.

Kern County — Midway - Sunset: Chanslor Canfield Midway Oil Co.'s G 26-25, ne nw sw 25-31-22, pump 28 bbls 19-gr oil, 10 wtr, perf 2322-2450 ft, gun perf 1985-2040, td 2600 ft, pb 2454 ft.

North American Oil Consolidated's 78, sw ne ne 16-32-23, pump 40 bbls, perf 1425-30, 1490-95 ft, td 1800 ft.

Chanslor Canfield Midway Oil Co.'s 85-6, se se sw 6-32-23, pump 215 bbls 20.1-gr, oil sand 2985 ft, perf 2986-3049 ft, td 3050 ft.

Republic Petroleum Co.'s 7-45, nw sw ne 7-32-23, pump 213 bbls 20.8-gr, 346 ft perf 3048 ft, td 3050 ft.

Kern County—Mount Poso: Ring Oil Co.'s Vedder B-1, se nw se 28-26-28, Vedder sand, topped 1437 ft barren, abnd 1555 ft.

Los Angeles County—Coyote, West: Standard's Murphy Coyote 133, nw ne nw 20-3-10, flow 470 bbls 32.4-gr oil, 145,000 gas, 32/64-in, 360/1,000 lbs, 407 ft perf 5898 ft, td 5900 ft.

Los Angeles County—Del Valle: Bankline Oil Co.'s Orduno 103, se se nw 18-4-17, abnd 4596 ft.

Standard's Sepulveda 6, 529 ft n 223 ft w sw cor lse, 17-4-17, flow 95 bbls 33.6-gr, 10/64-in 75/1060 lbs, 143 ft perf 5329 ft, td 5330 ft.

Los Angeles County — Dominguez: Union's Callender 86, 2301 ft nly 3150 ft wly fr c/l Victoria and Central, 29-3-13, flow no est, perf 6208-5668 ft, td 6232 ft.

Union's Hellman 3 (old well deepened), pump no est, otd 4822 ft, redrid and deepened to 5181 ft, pb 4940 ft.

Los Angeles County—Wilmington: Morton & Dooley's Conway 1, 130 ft s 129 ft w c/l Frigate and "R" Sts, 30-4-13, pump 132 bbls 16-gr oil, 60 wtr, perf 3219-3428, 3565-3685 ft, td 3686 ft.

Orange County—Huntington Beach: Southwest Exploration Co.'s State J-3, 418 ft w alg proj. c/l Ocean fr c/l 23rd St., thence 123 ft n at r/a, 10-6-11, flow 1142 bbls 19.1-gr oil, 100 wtr, 250/600 lbs, 1528 ft perf 4037 ft, td 4037 ft.

Santa Barbara County—Cat Canyon: Union's Bell 20, 4362 ft sly fr nec ppty thence 1641 ft wly at r/a, 35-9-33, pump no est, perf 5745-5186, 5101-4936 ft, td 5825 ft.

Santa Barbara County—Santa Maria Valley: Bush-Hancock Oil Co.'s Wylie 6, ne se se 25-10-34, flow 175 bbls 14-gr, 1074 ft perf 5035 ft, td 5070 ft.

Ventura County—Padre Canyon-San Miguelito: Continental's Grubb 30, sw nw sw 24-3-24, flow 779 bbls 31.5-gr oil, 114,000 gas, 24-32/64-in, 320/720 lbs, 1120 ft perf 7329 ft, td 7330 ft.

Ventura County — Ventura Avenue: Shell's Taylor 151, 2935 ft s 4332 ft w of R.C.L. 11, pump no est, perf 7906-7365, 7523-6370 ft, td 7909 ft.

CALIFORNIA WILDCAT

Kern County—Failure: Golden Bear Oil Co.'s Agey Hunt 1, nw nw nw 28-27-27, Shark Tooth area, green shale, abnd 1994 ft.

COLORADO

Moffat County—Iles: Stanolind's Parkinson 26-X, c se se 22-4n-92w, pump 23 bbls, Sundance sand 3406-3454 ft.

ILLINOIS

Clay County: Carson & Corley's M. Billings 1, sw sw nw 15-4n-5e, abnd 2673 ft.

Kingwood's E. Hall "B" 1, se sw ne 17-5n-7e, Cyp 2530-37 ft, 126 bbls, 2537 ft.

Edwards County: Transwestern Oil Co.'s N. F. Wahler 1, se se sw 5-2s-14w, abnd 2871 ft.

Sohio Prod. Co.'s Union Central Life Ins. 1, nw sw sw 31-2s-11e, abnd 3322 ft.

Effingham County: Tide Water's Burke 8, ne ne sw 27-6n-5e, Ben 2295-2318 & AV, 32 bbls, 2385 ft.

Gallatin County: Ashland & Herndon Drlg.'s J. H. Curry 1, se nw ne 15-8s-10e, Walts 1961-68 ft, 287 bbls, 1979 ft.

Oil Management's Arensman 2, nw sw ne 15-8s-10e, Walts 1961-73 ft, 140 bbls, 1981 ft.

Hamilton County: Texas' J. A. Barnett 2, ne nw se 27-4s-7e, AV 3310-20 ft, 3324-27 ft, 21 bbls, 3327 ft.

Texas' J. A. Barnett 3, ne sw se 27-4s-7e, abnd 3490 ft.

Otis Gibson's Neal 1, se ne nw 8-6s-7e, abnd 3041 ft.

Jasper County: Continental's Provident Mutual Life Ins. 2, se nw sw 28-6n-9e, McCl 3109-15 ft, 59 bbls, 3115 ft.

Gulf's Geo. Kinsel 1, se ne nw 33-6n-9e, McCl 3098-3100 ft, 45 bbls, 3110 ft.

Jefferson County: Superior's Indiana Nat'l Bank 1, e½ sw nw 19-1s-4e, abnd 2873 ft.

Nash Redwine's D. M. Strickland 1, ne sw se 31-2s-14w, abnd 3008 ft.

Marion County: Texas' S. Parker 17, se ne ne 33-2n-2e, Ben 1832-64 ft, 91 bbls, 1864 ft.

Wabash County: C. E. Skile's Wheatley 3, nw ne se 3-1s-13w, Biehl 1741-60 ft, 225 bbls, 2474 ft.

C. E. Skiles' E. Dunkel "A" 1, se se nw 5-1s-12w, Penn 1528-43 ft & Cyp, 35 bbls, 2061 ft.

C. E. Skiles' Dunkel "A" 3, sw se nw 5-1s-12w, Penn 1504-32 ft, 40 bbls, 1534 ft.

Sohio Prod. Co.'s M. G. Kerwin 6-x, ne nw se 15-3s-14w, abnd 1823 ft.

O'Mera Brothers' J. C. Utter 4-A, ne se ne 17-1s-12w, Cyp 2028-42 ft, 55 bbls, 2050 ft.

Sohio Prod. Co.'s M. Kerwin 4-X, nw sw ne 15-3s-14w, abnd 2832 ft.

Sohio Prod. Co.'s M. G. Kerwin 6-X, sw se ne 15-3s-14w, abnd 2046 ft.

Wayne County: Deep Rock's Clyde Young 3, se se 20-1s-7e, McCl 3245-52 ft, 185 bbls, 3252 ft.

Pure's H. Michels 2, se sw sw 25-2n-7e, AV 2931-55 ft, 367 bbls, 3010 ft.

White County: N. V. Duncan's F. Bisch 1, sw se se 31-3s-14w, TS 2282-90 ft, 2304-09 ft, 2311-22 ft, 140 bbls, 2322 ft.

W. C. McBride's Howard 2, nw ne ne 6-4s-14w, TS 2298-2302 ft, 2304-09 ft, 2312-21 ft, 185 bbls, 2321 ft.

Great Lakes Carbon Corp.'s White Co. Bank 3, se se nw 28-6s-10e, TS 2285-90 ft, 50 bbls, 2300 ft.

ILLINOIS WILDCATS

Clinton County — Failure: K. McConnel et al's A. Joffray 1, ne ne se 2-1n-3w, abnd 1511 ft.

Fayette County—Failure: Leland Waggoner et al's L. Koelling 1, ne ne nw 28-5n-4e, abnd 2500 ft.

Ford County—Failure: A. C. Murray's Paulsen 1, se nw ne 1-28n-9e, abnd 720 ft.

Hamilton County—Failure: Phillips' Federal Coke Co. 1, se se nw 8-7s-6e, abnd 3363 ft.

White County—Failure: Bur Lambert's F. Harlem 1, nw sw ne 15-7s-10e, abnd 2984 ft.

INDIANA

Gibson County: R. D. Brown's Lehman 8, s/2 sw ne 36-1s-10w, Hds 1348-1365 ft, 12 bbls, 1367 ft.

KANSAS

Barton County—W. Ainsworth: Black-Marshall's Ainsworth 7, nw sw nw¼ 16-17s-13w, Arbuckle 3394 ft, input 60 bbls wtr per hr, swd, 3831 ft.

Barton County—Kraft-Prusa: Lauck & Mon-

Wells Completed in United States in Week Ended January 22, 1944

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative This Year	Cumulative Last Year
Arkansas	2			2	4						4	5	10	10
California	23			3	26	1			1	1	28	33	108	90
Colorado	1				1									3
Georgia														1
Illinois	17			10	27				5	5	32	34	119	144
Indiana	1				1						1	4	22	22
Kansas	8		2	5	15	3			3	3	21	29	139	121
Kentucky	2			2	4				2	2	6	4	27	18
Louisiana	6	1		1	8	2					10	12	36	42
North Louisiana	1	1			2						2		6	10
South Louisiana	5			1	6	2					8	12	30	32
Michigan	2				2		1		5	6	8	7	41	31
Mississippi														20
Missouri														1
Montana	6				6				1	1	7	8	21	12
Nebraska	1			1	2				3	3	5		5	
New Mexico	4			1	5						5	15	28	21
New York	15			10	25						25	25	97	107
Ohio	4	6		2	12						12	17	36	78
Oklahoma	10	2	1	6	19		1	1	1	3	22	31	112	110
Pennsylvania	28	7	14		49						49	48	192	190
Tennessee														1
Texas	33	3	2	14	52	2	5	2	21	28	82	83	344	300
Rest of E. Texas	1			2	3				2	2	4	6	22	12
North Texas	3		2	4	9				3	3	12	16	72	67
W. Central Tex.	3			1	4				2	2	6	10	24	22
West Texas	17			2	19	1	1		5	6	25	22	81	64
Tex. Panhandle	2				2						2	2	12	25
G. Coast, Upper	1			2	3	1			2	2	6	3	31	21
G. Coast, Lower	4	3		1	8		3	1	5	9	17	19	69	47
Southwest Texas	2			2	4		1	1	2	4	8	5	27	39
S. Central Tex.													4	5
West Virginia		11		1	12						12	22	77	64
Wyoming	5			1	6						6	3	10	7
Total U.S.	168	30	19	59	276	8	7	3	42	52	336	380	1,425	1,467

*Includes distillate wells. †Includes salt water disposal wells.

crief's Grossardt 3, ne sw nw¼ 16-17s-11w, Arbuckle 3285 ft, pump 486 bbls, 3291 ft.

Cowley County—Unnamed: Grallop & McNeish's N. C. Dunn 2, sw ne se¼ 28-34s-5e, Mississippi 3030 ft, ns, abnd 3031 ft.

Ellis County — Bemis: Shell's J. Rumsey 1-W, c w½ ne nw¼ 23-11s-17w, Dolomite 3896-3928 ft, quartzite 3928 ft, input 199 bbls wtr in 14 minutes, swd, 3993 ft.

Graham County — SE Morel: Bridgeport's Fesaler 2, nw sw nw¼ 25-9s-21w, Arbuckle 3784 ft, 100 gals acid, pump 531 bbls, 3782 ft.

McPherson County—Paden: Phillips' Wining 1, sw se sw¼ 10-18s-1w, Mississippi 2675 ft, pump 459 bbls, 2688 ft.

Pratt County—Chitwood: Lion's Chitwood 6, ne se sw¼ 23-28s-12w, Simpson 4395 ft, perf 1000 gals acid, flow 28 bbls oil per hr for 15 hrs, 4510 ft.

Rice County—Volkland: Phillips' Appel 1, ne ne se¼ 28-18s-9w, Arbuckle 3259 ft, shot 5 qts, abnd 3290 ft.

Phillips' Appel 2, ne se se¼ 28-18s-9w, Arbuckle 3244 ft, abnd 3254 ft.

Rice County — Smyres Pool: Alco Valve's Schneider 1, ne ne se¼ 26-19s-6w, Mississippi 3288 ft, shot oil 3315-20 ft, abnd 3320 ft.

Russell County—N. W. Sellens: Texas Co.'s L. Sellens 2, c nw nw¼ 22-15s-13w Lansing 3127 ft, 5000 gals acid, pump 33 bbls oil, 3127 ft.

Texas Co.'s L. Sellens 3, c nw sw¼ 22-15s-13w, Lansing 3046 ft, 5000 gals acid, pump 490 bbls oil, 3046 ft.

Russell County—S. Forrest Hill: Magnolia's Hafeman Est. 2, c sw ne¼ 32-15s-12w, Arbuckle 3345 ft, abnd 3351 ft.

Russell County — Trapp: Coralena's Gale Sennens 5, sw nw ne¼ 19-15s-13w, Arbuckle 3266 ft, pump 238 bbls oil & wtr, 3286 ft.

Coralena's Gale Sellens 6, c s½ ne ne¼ 19-15s-13w, Arbuckle 3234 ft, pump 201 bbls, 3251 ft.

KANSAS WELLS DEEPENED

Ellis County—Walters: Lario O & G's Weisner 1, c n½ sw sw¼ 11-12s-18w, Arbuckle 3670 ft, pump 65 bbls oil, 65 bbls wtr, otd 3682 ft, td 3699 ft.

Rice County—Keesburg: Phillips' Proffitt 3, c sw ne¼ 8-20s-9w, Arbuckle 3222 ft, 1500 gals acid, swab 50 bbls oil 1½ hrs, otd 3233 ft, td 3247 ft.

Russell County—Fairport: T. C. Johnson Est. Sohio's Sutton "C" 2, se nw sw¼ 5-12s-15w, Lansing 2750 ft, perf 500 gals acid, pump 5 bbls per hr, otd 2838 ft, td 2983 ft.

KANSAS WILDCATS

Butler County—Failure: Marion Oil Co.'s Schweiter 1, sw nw ne 19-28s-8e, Miss 2812 ft, hfw, abnd 2855 ft.

Saline County—Failure: Nadel & Gussman & Harbar's Blomgren 1, ne se se 24-16s-2w, Lansing 2065 ft, Miss 2706 ft, abnd 2730 ft.

Trego County — Failure: Sohio Producing Co.'s Hansen 1, nec 19-15s-24w, Lans 3880 ft, Base K. C. 4188 ft, Marmaton chert 4268 ft, Cherty Cong 4461 ft, Miss 4500 ft, abnd 4619 ft.

KENTUCKY

Daviess County: Miller & Shiarella's T. P. Miller 3, 10-N-27, abnd 1924 ft.

Henderson County: W. F. Lacey et al's Cooper 2, 16-Q-22, TS 1861-69 ft, 125 bbls, 1869 ft.

Woods et al's Baulfauf 4, 16-Q-22, TS 1855-62 ft, 190 bbls, 1862 ft.

Ohio County: Thrasher & Helm's A. H. Overby 2(5), 17-N-32, abnd 643 ft.

KENTUCKY WILDCATS

Gallatin County—Failure: Gulf's Gilkinson 1, swc se ne sw 15-V-74, abnd 499 ft.

Henderson County—Failure: Sun's G. W. Crawford 1, 22-P-22, abnd 2734 ft.

NORTH LOUISIANA

Union Parish—Monroe: Interstate Nat'l's Fee 132, 24-21n-3e, flow after acidized, 6,682,000 gas, td 2176 ft.

Tensas Parish—Holly Ridge: Union Producing Co.'s Penrod-Jorden 2, ne ne 19-11n-10e, flow 195 bbls 14½ hrs, 4-in, Tuscaloosa 8410-28 ft, td 8430 ft.

SOUTH LOUISIANA

Acadia Parish—Branch: Sun's Trimble 1, 1304 ft s 660 ft w of ne cor frac sec 31-9s-1w, 7-in 10,275 ft, perf 10,480-500 ft, 88 bbls, 3/16-in, td 10,643 ft.

Calcasieu Parish—Vinton: Union Oil's Gray Unit 1-A, 1650 ft s 330 ft e of nw cor sec 32-10s-12w, 5½-in 5895 ft, perf 5818-40 ft, flow 162 bbls, ½-in, td 6127 ft.

Union Oil's Gray 19-G, 330 ft n&e of sw cor sec 27-10s-12w, 5½-in 5850 ft, perf 5800-26 ft, 160 bbls, 9/64-in, td 5850 ft.

LaFourche Parish—Bully Camp: Gulf's Delta Securities 4, 1650 ft s on wl sec 53 fr nw cor 660 ft e at ra in sec 53-19s-21e, abnd 11,284 ft.

LaFourche Parish—Chacahoula: Sun's Dibert, Stark & Brown 20, 3337 ft w 1992 ft n of se cor sec 70-15s-15e, 7-in 4784 ft, perf 4648-66 ft, flow 9 bbls 2 hrs, 10/64-in, td 4784 ft.

Vermilion Parish — Gueydan: Fohs Oil's Humble 4, 2900 ft n 1140 ft w of se cor sec 27-11s-1w, 5½-in 9833 ft, perf 9790-95 ft, 346 bbls, 9/64-in, td 9833 ft.

The OIL WEEKLY'S TRADING POST

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1 New 14 x 14 Ideal Ajax engine
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1 20½" fully oil bath Emsco rotary
1 122" 535,000 lb. capacity Lee C. Moore derrick
1 8' steel substructure with all timbers
9100' 4½" 16.60 lb. regular Acme full hole drill pipe
2 7¼ x 20' drill collars, all necessary subs
1 20' type J. Hughes conventional core barrel
1 4½" B J elevator
1 Set B J elevator bails
1 2 K. W. Moon generator
2000' 1⅛" Wickwire-Spencer drilling line
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1 7' x 15' clothes changing house
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All merco stops on mud manifold rigged up with 4" 6000 lb. Thornhill-Craver unibolt union, 4" steel lines from boiler to rig with unions on each joint, casing and pipe racks of fir timber.

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■ Wyoming Oil Leases on the Meridian Anticline, near shallow production. One block for drilling. R. O. Barnsley, 1133 Forest Ave., Palo Alto, Calif.

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■ Geologist with wide experience in reconnaissance and detailed surface mapping for six months contract beginning April first, to survey large tract in Canada. Experience in coordinating seismograph survey with geological conditions necessary. Experience in supervising drilling wells also necessary. Write giving references, training, experience and salary desired. Box 19, c/o The Oil Weekly, Houston, Texas.

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WANTED

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ADVERTISING RATES

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Trading Post Section, THE OIL WEEKLY
P. O. Box 2608 Houston 1, Texas

SOUTH LOUISIANA OLD WELLS RECOMPLETED

St. Landry Parish — Krotz Springs: Gulf's Haas-Hirsch 1-E, 3008 ft s 1883 ft e of nw cor sec 21-6s-7e, 7-in 10,027, orig comp 12-27-42, drilled fr 11,398 ft to 12,298 ft, perf 9418-22 ft, flow 300 bbls, 5/32-in, td 12,298 ft.

St. Martin Parish — West Lake Verrett: Shell's Breaux 2-B, 2230 ft n 89° 25 mins e alg sl sec 15 fr sw cor, th 660 ft n 00° 29 mins w in sec 15-14s-12e, orig comp 2-12-42, otd 11,500 ft dr to 11,570 ft, pb and perf 11,040-52 ft, 245 bbls, ⅛-in, td 11,570 ft.

St. Martin Parish—Anse La Butte: Stanolind's Rycade 4, sec 121-9s-5e, orig comp 10-20-41, dual comp 1-3-44, perf 6294-6308 ft, 124 bbls, 9/64-in; perf 5980-6010 ft, 180 bbls, 9/64-in, td 6533 ft.

MICHIGAN

Newaygo County—Goodwell: Pure's Anderson 1, e½ ne ne 8-14n-11w, Traverse 2787-91 ft, flow 194 bbls oil, 65 bbls wtr, td 2873 ft.

Pure's Anderson-Billings 1, e½ nw ne 8-14n-11w, Traverse 2791-93 ft, flow 173 bbls 13 hrs, td 2793 ft.

MICHIGAN WILDCATS

Allegan County—Failure: W. H. Clock's Burgh 1, ne se ne 5-1n-15w, Traverse, abnd 1217 ft.

Isabella County—Discovery: Cities Service's Methner 1, se sw nw 33-16n-3w, Dundee 3640 ft, pay 3690-97 ft, flow 303 bbls, 18 hrs after 1000 gals acid, td 3698 ft.

Lake County—Failure: J. C. Glavin's Wilder 1, w½ sw sw 35-19n-11w, Dundee 3593 ft, Monroe 3697 ft, abnd 3799 ft.

Osceola County—Failures: Gordon Oil Co.'s Larson 1, s½ se nw 14-20n-10w, Dundee 3794 ft, abnd 3838 ft.

Maguire and Coffields' Hibma 1, n½ nw ne 2-20n-8w, Dundee 4075 ft, abnd 4089 ft.

Sun's Postal 1, s½ se se 5-18n-8w, Dundee 4102 ft, abnd 4225 ft.

MONTANA

Glacier County—Cut Bank: Santa Rita Oil & Gas Co.'s Fee 1-13, c ne nw 13-33n-6w, swab 120 bbls Cut Bank sand 2985-3029 ft, 7-in 2990 ft, td 3031 ft.

A. R. Pardue's Tribal 4-186, nw se ne 19-32n-5w, swab 40 bbls, shot 180 qts Cut Bank sand 2746-2815 ft, 7-in 2746 ft, td 2860 ft, pb 2820 ft.

Toole County—Kevin-Sunburst: Leone Letts' Kalispel-Kevin 11, nw ne ne 19-35n-1w, 500 gals acid Ellis-Madison 1512 ft, pump 60 bbls, td 1536 ft.

Glacier County—Cut Bank: Glacier Production Co.'s Fuller 6, se sw se 17-33n-5w, 7-in 2952 ft, swab 16 bbls, Cut Bank sand 2945-79 ft, td 3000 ft, pb 2980 ft.

Toole County—Kevin Sunburst: Leone Letts' Kal-Kevin 10, nw nw nw 19-35n-1w, pump 27 bbls, shot 65 qts, Ellis-Madison 1525-1535 ft.

Texas Co.'s Lind 8, nw se nw 11-35n-2w, pump 85 bbls, Ellis-Madison 1634-42 ft.

MONTANA WILDCAT

Pondera County—Farmington Block: Texas Co.'s State 1, se nw se 16-25n-4w, Madison 1910 ft, so 1910-14 ft, abnd in sulphur water 1926 ft.

NEBRASKA

Richardson County—Dawson: Uhri & Higgins' Noafger 1, c e½ se ne¼ 9-1n-14e, Hunton 2217 ft, 1500 gals acid, pump 35 bbls oil & lots wtr, 2237 ft.

Power Oil's Albin 2, c w½ ne sw¼ 10-1n-14e, Hunton 2220 ft, pump 50 bbls fluid, 30% oil, abnd 2258 ft.

NEBRASKA WILDCATS

Buffalo County—Failure: Carter Oil Co.'s Strat 3, sw sw sw 13-10n-15w, abnd 4132 ft.

Johnson County—Failure: Stanolind's Strat 6, ne ne ne 4-4n-12e, abnd.

Otoe County—Failure: Stanolind's Strat 2, se ne ne 22-7n-11e, abnd.

NEW MEXICO

Eddy County: Franklin Pet. Corp.'s Yates 7-A, nw se sw 6-18s-30e, flow 100 bbls, 2-in, shot 15 qts 2835-40 ft.

Grayburg Oil Co.'s Keeley 6-B, c ne nw 25-17s-29e, flow 235 bbls, ¾-in, 4500 gals acid 2945-3082 ft.

Harvey E. Yates et al's Foard 1, c nw nw 10-19s-30e, abnd 2990 ft.

Lea County—Arrowhead: Gulf's Mattern 4-D, c nw nw 7-22s-37e, elev 3460 ft, salt 1259-2480 ft, flow 379 bbls, 2-in, 2000 gals acid 3690-3755 ft.

Lea County — Rhodes: Texas Co. et al's Rhodes 4-B, c se ne 27-26s-37e, flow 292 bbls, 2-in, shot 160 qts 3180-3260 ft, td 3270 ft.

OKLAHOMA

Creek County—SE Stroud: J. E. Crosbie's Elle 4, nw sw ne 17-14n-7e, Prue 2856 ft, shot 280 qts, flow 192 bbls, 2930 ft.

Phillips' Chapley 2, nw se nw 17-14n-7e, Prue 2875 ft, shot 400 qts, flow 220 bbls, 2960 ft.

Creek County—Glenn: Gulf's Anderson 35, sw se nw 9-17n-12e, Glenn 1569 ft, input 1748 ft.

Sinclair Prairie's L. L. Berryhill 55, ne se se 16-17n-12e, Glenn 1412 ft, shot 140 qts, pump 10 bbls, 1567 ft.

Coal County — Lula: Stanolind-Amerada's Hamilton Unit 1, c ne 22-3n-9e, Cromwell 3580 ft, 22,000,000 gas, 3710 ft.

Garvin County—Pauls Valley: Ohio et al's Hutchins "B" 2, nw nw nw¼ 25-4n-1w, sand 4032-41 ft, so Cong 4090 ft, abnd 4521 ft.

Pure-Continental's Collins-Hickman 3, nw se sw 25-4n-1w, dual comp, Penn 3895-3950 ft, flow 145.44 bbls oil, 450,000 gas, ¾-in; Bromide 3968 ft, flow 2697.12 bbls oil, 3,345,-000 gas, ¾-in, 4073 ft.

Logan County—S. Lovell: Gulf's Manning 2, c sw nw 3-17n-4w, Layton 4903 ft, shot 60 qts, flow 195 bbls oil, 3,000,000 gas, ½-in, 4951 ft.

Okfuskee County — NW Bearden: Foundation's Scott 2, se ne ne 1-10n-8e, Cromwell 3489 ft, flow 70 bbls oil, 340 bbls wtr, 1,000,-000 gas, 3513 ft.

Okfuskee County — Cromwell: Shell's S. Little 1, se sw sw 11-10n-8e, Cromwell 3563 ft, shot 6 qts, pump 11 bbls oil, 18 bbls wtr, td 3592 ft, pb 3579 ft.

Okfuskee County—Welcetka: Wells et al's Barnand 1, c nw sw 34-11n-11e, abnd 1818 ft.

Okfuskee County—N. Dill: C. C. Cummings' Curry 1, nw se nw 23-12n-8e, Cromwell, abnd 3690 ft.

Okfuskee County — Blakely: McBride's Brook 1, se ne se 35-12n-10e, Cromwell 3066 ft, shot 39 qts, flow 90 bbls, 720,000 gas, 3081 ft.

Oklahoma County—W. Edmond: Denver P. & R.'s Young 2, c ne nw 32-14n-4w, Hunton 6864 ft, flow 1234 bbls, ½-in, 6967 ft.

D. D. Bourland's M. French 1, nw nw nw 33-14n-4w, Hunton 6770 ft, flow 728 bbls, ½-in, 6917 ft.

Pottawatomie County — Unnamed: W. J. Sherry's Smedley 1, ne ne nw 6-9n-4e, Sylvan 5045 ft, abnd 5271½ ft.

Seminole County—Jackson: Mid-Continent's A. Norvell 1, nw ne sw 23-8n-7e, Cromwell 3305 ft, abnd 3318 ft.

Seminole County—NE Sylvan: Shell's Harrison 1, nw nw se 25-11n-7e, Cromwell 3712 ft, abnd 3750 ft.

Stephens County—Velma: L. Winkler's W. B. Walker 1, nw ne sw¼ 10-25-5w, sand 1027-47 ft, pump 11 bbls, 1047 ft.

OKLAHOMA WILDCATS

Hughes County — Discovery: Burk - Greis' Hamilton 2, sw ne sw 33-4n-9e, Cromwell 4228-31 ft, 29,800,000 gas, 4231 ft.

Logan County—Discovery: Gulf's Prichard 1, nw nw 22-17n-3w, 2nd wx 6304 ft, 5½-in 4730 ft, flow 49 bbls, ½-in, td 6330 ft, pb 4770 ft.

Payne County—Failure: Texas Co.'s Gunkel 1, nw sw ne 9-17n-1e, 2 Wilcox 5188 ft, abnd 5245 ft.

WEST TEXAS

Andrews County—Fullerton: Fullerton Oil Co.'s Wilson 4, c sw sw PSL 15, blk A-32, flow 852 bbls, ½-in, 12,000 gals acid Clear Fork 6814-7270 ft.

Andrews County—Mascho: Phillips' University 3-C, 522 ft snl 678 ft wel sec 4, blk 10, flow 72 bbls, ¼-in, 5000 gals acid 4470-4609 ft.

Cochran County—Slaughter: Devonion et al's Duggan 8-C, 510 ft out se cor lab 8, lge 54, Oldham CSL, flow 762 bbls, 2½-in, 12,000 gals acid 5045-84 ft.

Cochran County—Northwest Slaughter: Sunray Oil Co.'s Wright-Gauvey 1, 660 ft out se cor lab 9, lge 59, Martin CSL, flow 392 bbls, 2-in, 4750 gals acid 4870-4944 ft.

Ector County—Foster: Union of Cal's Kone 2, 1990 ft snl 660 ft ewl T&P 41, blk 42, T-2-S, pump 94 bbls, shot 360 qts 4454-4603 ft.

Ector County—North Cowden: Stanolind's Midland Farms 11-D, 2093 ft snl 783 ft ewl G&MMB&A 44, blk 42, T-1-N, flow 220 bbls oil, 8% bs&w, ¾-in, shot 260 qts 4670-4774 ft, td 4830 ft.

Gaines County—Seminole: C. E. Bay et al's Austin-Humble 1-B, 1980 ft snl 1984 ft wel W.T. Ry. 190, blk G, flow 213 bbls oil, 18% bs&w, ½-in, shot 80 qts 5190-5237 ft, td 5237 ft.

Howard County—Iatan-East Howard: M. & M. Prod. Co.'s Davis-Hall 4, sw se se T&P 44, blk 30, T-1-N, pump 39 bbls, shot 380 qts 2635-2715 ft, td 3245 ft.

Howard County—Moore: J. B. Hawley Jr.-Northern Ordnance's Cowden 1, se se ne T&P 18, blk 33, T-1-S, pump 15 bbls oil, 30 bbls wtr, shot 500 qts 3180-3300 ft, td 3327 ft.

Mitchell County — Westbrook: Anderson-Prichard Oil Corp.'s Morrison 3-A, 330 ft snl 1662 ft wel T&P 32, blk 28, T-1-N, pump 67 bbls, shot 890 qts 2900-3080 ft.

Anderson-Prichard Oil Corp.'s Morrison 5-A, 2315 ft nsl 1662 ft wel T&P 32, blk 28, pump 108 bbls, shot 1030 qts 2899-3092 ft.

Col-Tex Ref. Co.'s Abrams-T. P. Land Trust 3, 993 ft ewl 990 ft nsl T&P 41, blk 28, T-1-N, pump 74 bbls, shot 350 qts 3035-3155 ft.

Col-Tex Ref. Co.'s Graeber 2, 999 ft nsl 2355 ft ewl T&P 22, blk 28, T-1-N, pump 79 bbls, shot 1115 qts 2938-3083 ft.

Pecos County—White-Baker: Cardinal Oil Co.'s White-Baker 5-A-45, 2594 ft nsl 330 ft ewl HE&WT 45, blk Z, flow 59 bbls, 1-in, shot 80 qts 1732-50 ft.

Upton County—McCamey: Milton Unger et al's Harrell-Shell 1, 330 ft out n cor GC&SF sec 7, abnd 2133 ft.

Ward County: Gulf-O'Brien-W. N. Hooper-L. L. Horne's Sealy 3, c w½ sw sw G&MMB&A sec 96, blk A, elev 2653 ft, flow 73 bbls, 1-in, shot 290 qts 2590-2703 ft.

Ward County—Shipley: Jas. H. Snowden-L. H. Freedman's Wristen-Gulf 2-D, 1658 ft fr nwl 330 ft fr swl H&TC 2, blk 5, abnd 2563 ft.

Winkler County—Weiner: Ralph Lowe et al's Brown-Altman (Humble) 15, sw se ne PSL 24, blk B-5, flow 264 bbls, 1-in, shot 170 qts 3115-75 ft.

Yoakum County—Wasson: Humble's Randall 24, c se nw sec 859, flow 348 bbls, 30/64-in, 7000 gals acid perf 4995-5095 ft, td 5110 ft.

WEST TEXAS WELL DEEPENED

Ward County—Pecos Valley: T. E. Jamison-Chas. Pollard's White 4, 660 ft fr swl sel H&TC 36, blk 1, elev 2423 ft, otd 3110 ft, abnd 4362 ft.

WEST TEXAS WILDCATS

Cochran County—Failure: Seaboard-T. P. Coal & Oil Co.'s Evans 1, c se se PSL 15, blk Y, elev 3949 ft, anhydrite 2320 ft, San Andres 4170 ft, abnd 5134 ft.

Hockley County — Oil Discovery: Woodley Pet. Co.'s Harless-Stanolind 1, c nw nw sec 21, blk A, R. M. Thompson sur, 21 mi ne Slaughter field, nearest prod, elev 3386 ft, anhydrite 1970 ft, brown lime 3440 ft, San Andres 3740 ft, Glorietta 5190 ft, pump 161 bbls 26-gr, 18,000 gals acid Clear Fork 5917-80 ft, td 6000 ft, pb 5985 ft.

Hockley County—Failure: Globe O&R Co.'s Williams 1, 580 ft out nw cor lab 2, lge 735, State Capitol Lands, elev 3492 ft, anhydrite 2110 ft, brown lime 3620 ft, San Andres 3930 ft, abnd 6412 ft.

Lamb County—Failure: Eugene Constantin et al's Ray 1, 440 ft out se cor lab 8, lge 680, State Capitol Lands, anhydrite 2100 ft, San Andres 3360 ft, abnd 4374 ft.

Pecos County—Failure: Bryce McCandless et al's Cordova Union-Gulf 1-10, c se se T&St. L. Ry. 10, blk 141, elev 2520 ft, detrital 4690 ft, granite 4877 ft, abnd 4878 ft.

Reeves County—Failure: Standard of Texas' Keasler 1, c sw nw PSL 10, blk 72, elev 2837 ft, anhydrite 1623 ft, Delaware 3877 ft, abnd hard lime 8916 ft.

WEST CENTRAL TEXAS

Comanche County: L. H. Choate et al's Smith 7, 200 ft nsl 630 ft wel of 37-ac lse, MEP&P Ry. sur, pump 11 bbls, sand 624-46 ft.

J. E. Whitesides et al's Brown 1, 200 ft out ne cor w½ se E.T. Ry. 1, blk 2, abnd 726 ft.

Jones County—Akard: T. P. Coal & Oil Co.'s Stokes 3, Unit C, 1125 ft nsl 330 ft wel T&P 39, blk 17, elev 1678 ft, pump 14 bbls, sand 2130-36 ft.

Stephens County: Prince & Urban's Stanford 1, 1320 ft snl 330 ft ewl se T&P 45, blk 6, pump 5 bbls, 2000-20 ft, td 2040 ft.

WEST CENTRAL TEXAS WILDCATS

Jones County—Failures: S. C. Herring et al's Foster 1, 330 ft out se cor n-180 ac of w½ sec 49, Orphan Asylum Lands, abnd 2525 ft.

Ungren & Frazier et al's Mayes 1, 1250 ft ewl 330 ft snl of 140-ac tr in T&P 21, blk 17, elev 1765 ft, Flippen 2482 ft, abnd 2487 ft.

SOUTHWEST TEXAS

Duval County — Eagle Hill: Continental's Welder 2, 2970 ft fr nl 660 ft fr wl, Samuel Alexander sur 102, se flank, 38,448-ac lse, abnd 2900 ft.

Duval County—Sejita: Cox & Hamon's Palacios 1, 467 ft fr s&wl 421-ac lse, sw cor tr 36, San Pedro de Charco Redondo Gr, n flank, abnd 5810 ft.

Jim Hogg County—Yeager: Texas Co.'s East 1, 330 ft fr wl 637 ft fr nl sec 1, Don H. Marsh subdvn, S. Ynojosa Gr, 160-ac lse, 5½-in 3805 ft, perf 3769-74 ft, pump 5.1 bbls, td 3805 ft.

LaSalle County—Washburn: Quintana Petroleum's South Texas Syndicate 29, 1225 ft fr sl 4330 ft fr el, T. W. House sur 61, 5½-in 5546 ft, no perfs, flow 194 bbls, ¼-in, td 5559 ft.

SOUTHWEST TEXAS WILDCATS

Duval County—Failure: Gordon W. Johnson's Adami 1, 181-ac lse, Arnold & Barrett sur 47, nw cor county, abnd 1320 ft.

Zapata County—Failure: Dan Auld's Hirsch 1, 160-ac lse, GC&SF sur 595, abnd 2008 ft.

SOUTHWEST TEXAS NEW PAYS

Duval County — Cadena: Taylor Refining Co.'s Garcia 5-B, 3000 ft fr nl 4530 ft fr el, Blackstone-Hardeman sur, 671-ac lse, dual comp, 7-in 4556 ft, perf 4514-22 ft, 112 bbls, ¼-in; perf 4428-34 ft, 103 bbls, 9/64-in, td 4557 ft.

Zapata County—Lopena: Venture Petroleum Corp.'s Vela 1, 660 ft fr swl 1262 ft fr se&nwl blk 1, porc 21, 670-ac lse, 7-in 2752 ft, flow 7,800,000 gas open, td 2770 ft.

UNITED STATES WELL COMPLETIONS

LOWER TEXAS COAST

Goliad County — Slick - Wilcox: Transwestern's Jank 1, 525 ft fr nwl 595 ft fr nel 121-ac lse, CEPI&M sur 9, 5½-in 7636 ft, perf 7600-10 ft, 151 bbls, 9/64-in, td 7636 ft.

Jackson County — West Ranch: Humble's Toney 10-B, 4126 ft alg nel fr e cor 495-ac tr, w bank Lavaca River, R. Musquez Gr, 5½-in 5735 ft, perf 5548-65 ft, 185 bbls, ¼-in, td 5735 ft.

Magnolia's West Ranch 258-A, 660 ft w of 189-A 5510 ft fr nl 11,582-ac lse, Valentin Garcia Gr, t/sand 5560 ft, perf 5560-90 ft, 4,650,000 gas open, td 5593 ft.

Jim Wells County—North Magnolia City: Humble's Adams 4, 660 ft fr s&el 1494-ac lse, Marcelino Lopez Gr, 5½-in 5153 ft, perf 5006-11 ft, flow 10,500,000 gas open, td 5458 ft.

Kleberg County—Stratton: Humble's King Ranch-Paso Ancho 34, 1980 ft fr nl 4750 ft fr el, Santa Gertrudis Gr, 6350-ac lse, 5½-in 6605 ft, perf 6591-6600 ft, 117 bbls, ¼-in, td 6605 ft.

Nueces County—Agua Dulce: Hiawatha Oil & Gas' Rogers 2, 524 ft fr sl, 504 ft fr el 160-ac lse, sec 193, F. Z. Bishop Palo Alto subdvn, 7-in 7110 ft, perf 7044-58 ft, 134 bbls, 7/64-in, td 7111 ft.

Nueces County—Robstown: Sam E. Wilson's Naumann 3, 207-ac lse, lot 15, George H. Paul subdvn, Driscoll Rch, abnd 7197 ft.

LOWER TEXAS COAST WILDCATS

Bee County—West Cosden Discovery: H. B. Zachry Co.'s Brown 1, 620 ft fr swl 680 ft fr sel 451-ac lse, T. J. Butler sur, 5½-in 3647 ft, perf 3639-45 ft, flow 38 bbls, 43.7-gr, ⅛-in, td 3649 ft.

Jim Wells County—Canales Discovery: Sun's Canales 1, 3500 ft fr el 660 ft fr sl CCSD&RGNG sur 343, 3288-ac lse, 3 mi se Seeligson field, 5½-in 7237 ft, perf 7233-35½ ft, flow 174 bbls, 39.1-gr, 3/32-in, td 7237 ft.

Jim Wells County—Failure: Atlantic's Bishop 1, 645 ft fr nl 3500 ft fr wl 500-ac lse, Los Presnos de Abajo Gr, 2 mi w Bentonville field, abnd 5600 ft.

Karnes County — Failure: Southwood Oil Co.'s Cannon Est. 1, 100-ac lse, Antonio Lombrano sur, 2 mi ne Karnes City, abnd 5500 ft.

Live Oak County — Failures: Charles E. Fraser's Atkinson 1, 918-ac lse, Louis Ayers L&L sur 3, abnd 7015 ft.

H. B. Zachry Co.'s Nichols 1, 748 ft fr el 582 ft fr nl 240-ac lse, blk 13, Nichols Rch subdvn, Patrick Henry sur, abnd 7387 ft.

Refugio County—Failure: Hewit & Dougherty's Hynes 1, 2 mi nw Refugio field, 40-ac unit Manuel Arocha Gr, abnd 6343 ft.

LOWER TEXAS COAST NEW PAYS

Bee County—Blanconia: Sun's Tuttle 1, 467 ft fr s&el 500-ac lse, J. M. Keating sur, 5½-in 4149 ft, perf 4089-4105 ft, flow 570,000 wet gas, ¼-in, td 5095 ft.

Refugio County—Rooke: Hewit & Dougherty's Rooke 7-A, 662 ft fr e&wl 287-ac tr, blk 28, La Rosa Rch, JM&JM Aldrete Gr, dual comp, 5½-in 7145 ft, perf 6269-73 ft, 155 bbls, 3/16-in; perf 7134-39 ft, flow 76 bbls, 3/16-in, td 7145 ft.

LOWER TEXAS COAST EXTENSION

Nueces County—Agua Dulce: Simmonds & Perry's Fee 1-B, 467 ft fr nl 800 ft fr el sec 1, Simmons & Perry subdvn, 5600-ac lse, Puenticitas Gr, 5½-in 7368 ft, perf 7260-77 ft, flow gas-cond, shut-in, no gauge, td 7368 ft.

LOWER TEXAS COAST RECOMPLETIONS

Jim Wells County—Seeligson: Sun's Canales 21, 3125 ft fr el 1980 ft fr nl, Canales-Dickson sur 180, 3000-ac lse, dual comp, 7-in 6010 ft, perf 5240-45 ft, 132 bbls, 3/16-in; perf 5950-60 ft, 102 bbls, ⅛-in, td 6020 ft.

Transwestern Oil Co.'s Seeligson 8-B, 660 ft fr sl 2181 ft fr el sec 64, Haldeman subdvn, Seeligson Rch, 1318-ac lse, dual comp, 5½-in 6248 ft, perf 5905-10 ft, 94 bbls, 3/32-in; perf 4870-80 ft, 108 bbls, 5/16-in, td 6252 ft.

TEXAS GULF COAST

Harris County — Aldine: F. M. Corzelius' Hairgrove 1-A, 160-ac lse, E. Farias sur, 1320 ft fr nl 467 ft fr el, 5½-in 7253 ft, perf 7191-96 ft, abnd 7466 ft.

Jefferson County — Lovell Lake: Humble's Broussard 47, 6939 ft alg el fr ne cor lse, th at ra 5103 ft w, 1653-ac lse, C. Hillebrandt sur, 5½-in 7760 ft, perf 7720-22 ft, flow 136 bbls ¼-in, td 7810 ft.

Waller County—Katy: Sun's Stewart 1-A, 160-ac lse, H&TC sur, ne flank, abnd 6980 ft.

TEXAS GULF COAST WILDCATS

Harris County — Failure: Sun's Hirsch 1, 200-ac lse, w mi nw Huffman, set 5½-in 8821 ft, temp abnd 8821 ft.

Trinity County—Failure: American Liberty's Southern Pine 1, 160-ac lse, S. H. McClain sur, 10 mi nw Apple Springs, abnd 5016 ft.

TEXAS GULF COAST RECOMPLETIONS

Chambers County—Barbers Hill: Texas Gulf Producing Co.'s Kirby 30-B, 111-ac tr, orig comp 12-19-39, deepened fr 3456 ft to 5305 ft, perf 5272-5305 ft, 214 bbls, 7/32-in, td 5306 ft.

Harris County—North Houston: Union Producing Co.'s Radley 1, 39-ac tr, lot 10, blk 3, dual comp, orig comp 9-9-39, perf 7162-82 ft, 48,500,000 gas open; perf 6720-70 ft, flow 50,000,000 gas open, td 7251 ft.

EAST TEXAS

Wood County—Manziel: Chas. L. McMahon's Hudson 1, 491 ft nsl 467 fr m/w/el of 87-ac lse, Sam Burch sur, elev 444 ft, Georgetown 4980 ft, Paluxy series 6286 ft, flow 518 bbls, ¼-in, natural, perf 120 shots 6322-70 ft, td 6380 ft.

Wood County — Quitman: Allhands and Briley's Jones-Werner 1, 660 ft wel 2060 ft nsl, F. Herniger sur, ¾-mi w by s prod, elev 362 ft, Georgetown 5275 ft, Paluxy 6505 ft, abnd 6568 ft.

Shell's Cox 1, 467 ft wel 775 ft fr m/n/nl, Jas. Barfield sur, elev 413 ft, Georgetown 5102 ft, Goodland 6176 ft, Paluxy 6240 ft, Glen Rose 6602 ft, abnd 6654 ft.

EAST TEXAS WILDCATS

Navarro County — Failure: Dick Andrade and Northern Ordnance's Cunningham 1, 200 ft fr nel 3600 ft fr nwl Francisco Procella sur and on 2786.27-ac tr, elev 385 ft, Austin chalk 2380 ft, Woodbine 3156 ft, abnd 4003 ft.

Rusk County—Failure: N. H. Wheless Dr. Co.'s Walker 1, 3030 ft wel 660 ft nsl, Al G. Walling sur, elev 394 ft, Austin 3145 ft, Georgetown 3212 ft, Ft Worth 3714 ft, Goodland 4093-4275 ft, Paluxy 4320 ft, Glen Rose 4571 ft, massive anhydrite 6011-6260 ft, Rodessa 6355 ft, James 6738-6868 ft, Pettit 6968 ft, Travis Peak 7220 ft, abnd 7309 ft.

NORTH TEXAS

Archer County: C. T. Hedges et al's Echols 5-B, 700 ft wel 500 ft snl s-47 ac of e-92 ac TE&L Co. sec 2405, abnd 1303 ft.

Clay County: A. P. Kouri and Morgan's Cheeves 7, 150 ft ewl 2800 ft nsl 96-ac tr, blk 55, Bacon sur, pump 30 bbls, 1127-32 ft.

Jack County—Weir: Continental's Cooper 2, 1031 ft snl 913 ft ewl F. D. Hammond sur A-1104, pump 40 bbls, Strawn sand 2333-37 ft.

Throckmorton County: C. Coleman & W. C. Estes' Dawes 1-B, 250 ft snl 540 ft wel, C. W. Marquess sur A-236, abnd 650 ft.

Wichita County: Magnolia's Schmoker 46, 959 ft nsl 1019 ft ewl sec 24, Red River VFL sur, pump 7 bbls, 1725-33 ft, td 1749 ft.

Martin Properties' Ramming 4-A, 1841 ft wel 361 ft snl lot 1, H. Hastie sur A-92, abnd 1288 ft.

Young County: Martin & Harvey's Carpenter 4, 600 ft wel 410 fe nsl w½ sw TE&L sec 164, abnd 950 ft.

NORTH TEXAS GAS INPUT WELLS

Young County: Trumter Oil Co.'s Clark 11-A, 1000 ft snl 1050 ft ewl TE&L sec 218, sand 889-96 ft.

Trumter Oil Co.'s Rogers 5, 150 ft wel 450 ft snl e½ se TE&L sec 219, sand 881-90 ft, td 891 ft.

NORTH TEXAS WILDCATS

Archer County—Failure: W. H. Peckham et al's Dickey 1, 330 ft nsl 879 ft ewl sec 140, J. W. Harris subdvn, abnd 1350 ft.

Clay County—Failure: H. B. Dudley et al's Wells 1, 3500 ft ewl 200 ft nsl blk 32, Bacon sur, abnd 1356 ft.

Wichita County: Hanlon & Buchanan's Temple 1, 660 ft nsl 495 ft ewl blk 8, Palo Pinto CSL, elev 1025 ft, Bend 4083 ft, abnd 4538 ft.

TEXAS PANHANDLE

Carson County: Skelly's Schafer 176, 440 ft snl 1320 ft wel se I&GN 196, blk 3, pump 249 bbls, shot 490 qts 3070-3161 ft.

Gray County: H. F. Wilcox O&G Co.'s Combs-Worley 50, se nw sw I&GN 6, blk 4, pump 12 bbls, shot 50 qts 2985-3030 ft, td 3039 ft.

WYOMING

Converse County—Big Muddy: Continental's Crary 34, se nw nw 9-33n-76w, flow 100 bbls, td 4344 ft.

Park County—Oregon Basin: Ohio Oil Co.'s Cactus B-3, ne nw ne 6-51n-100w, Embar lime 3373 ft, pump 245 bbls, 6⅝-in, perf 3380-3434 ft, td 3652 ft.

Sweetwater County—Canyon Creek: Westates Oil Co.'s Horne 2, ne sw nw 11-12n-101w, abnd 2789 ft.

Sweetwater County—Lost Soldier: Sinclair Wyoming Oil Co.'s 105, nw se se 3-26n-90w, pump 1216 bbls, 7-in, Tensleep 4074 ft, td 4455 ft.

Park County—Elk Basin: Ohio Oil Co.'s Elk 27, sw se 24-58n-100w, flow 1536 bbls, 6⅝-in 4605 ft, Tensleep sand 4546-4703 ft.

Stanolind's Elk 5, No. 22TP, ne nw nw 30-58n-99w, flow 1560 bbls, ¾-in, Tensleep 4228 ft.

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ARKANSAS

Chicot County: Placid Oil Co.'s Roy Mathor 1, nw cor 21-18-2, lcn.

Placid Oil Co.'s Perrish Coleman 1, ne cor 22-18-3, lcn.

CALIFORNIA

Kern County: Bender & Orloff's 1, nw nw sw 6-29-28, Kern River area, lcn.

Ohio's KCL J-1, ne se nw 6-31-26, Ten Sections area, mim.

Seaboard's Fuhrman 2, ne se ne 21-28-28, Kern River area, mim.

Tide Water's Porter 1, se sw nw 18-30-29, Mountain View area, mim.

Western Gulf's KCL 75, nw se se 5-30-27, Stockdale area, mim.

Los Angeles County: Petroleum Exploration Co.'s Kraft 1, ne sw se 31-4-15, Newhall area, lcn.

Madera County: Texas Co.'s Gill 41-17, ne ne nw 17-13-16, Herminghaus area gas test, lcn.

Ventura County: Standard's Bowman 1, se se sw 14-4-18, Piru area, grade.

ILLINOIS

Clay County: Gulf's Keck 6, se se sw 26-4n-7e, lcn.

Salina County: Ohio Oil's Land-Gibbons Comm. 1, se sw nw 33-10s-7e, lcn.

Wayne County: Robinson's Felix 1, se ne se 12-3s-7e, lcn.

KANSAS

Barton County: Plains Exploration Co.'s Murdy 1, sw sw nw 6-18s-13w, Anhy 778 ft, dr 2465 ft.

Falcon Seaboard's Beals 1, c n½ ne se 22-19s-13w, lcn.

Hodgeman County: Continental's L. C. Koontz 1, swc 30-23s-21w, lcn.

Leavenworth County: Chas. Miller's Corlett 1, se sw se 23-9s-21e, mist.

Pratt County: H. B. Mabee's Eubank 1, nwc 4-27s-14w, lcn.

Bridgeport's Wittman 1, swc se 34-27s-14w, lcn.

Saline County: Harbar-Sinclair Prairie's Lattin 1, c s½ nw ne 35-14s-1w, lcn.

E. S. Adkins' Craig 1, swc nw 33-14s-2w, dr 250 ft.

Anderson-Pritchard's Damoude 1, nwc ne 27-15s-1w, lcn.

Stafford County: H. A. Hershgield & Co.'s W. M. Waite 1, c nw sw 25-22s-12w, rur.

Wallace County: Sinclair Prairie's Glad & Brock 1, se nw ne 19-13s-42w, lcn.

KENTUCKY

McLean County: Kingwood Oil's B. E. Clark 1, 21-L-27, lcn.

Ohio County: Kingwood Oil's E. Curtiss 1, 4-J-31, lcn.

NORTH LOUISIANA

Bossier Parish: J. R. Hayden Trs.'s Ellerbe 1, 1170 s 660 w ne cor 3-20n-13w, dr.

Tensas Parish: Arkansas Fuel Oil Co.'s Gibson 1, 653 e 662 s nw cor sw¼ 7-11n-10e, lcn.

Webster Parish: Ohio Oil Co.'s Pardee 1, 645 s 660 w ne cor 1-22in-10w, lcn.

SOUTH LOUISIANA

Calcasieu Parish: Continental's Prairie Land & Canal 1, 310 ft s 330 ft e of nw cor sec 2-11s-9w, East Moss Lake area, lcn.

Terrebonne Parish: Louisiana Land & Exploration Co.'s State-Bay 1, lse 200, 623 ft s 3315 ft e of USCGS sta "Hig," 1169 ft s 3348 ft e of nw cor sec 22-21s-14e, lcn 10,000-ft test.

MICHIGAN

Midland County: Sun's Porte 1, n½ ne nw 15-16n-2w, lcn.

OKLAHOMA

Atoka County: Northern Ordnance's Fulton Ranch 1-A, se sw sw 19-1s-12e, lcn 7000-ft test.

Creek County: L. B. Fackson's Berryhill 1, se sw ne 11-18n-10e, rum.

Garvin County: Ohio's Dorchester 1-A-G, nw nw sw 2-3n-1w, lcn McLish test.

Kay County: Higling & Parker's Stone 1-A, c s½ se se 30-25n-1e, Layton 3207 ft, 3238 ft.

McCurtain County: C. W. Whitehead's Hortline 1, ne sw se 2-7s-21e, spud.

Okfuskee County: Donmar Oil Co.'s Curry 1, nw sw nw 25-13n-8e, lcn.

C. A. Fleetwood's Wilson 1, ne ne 3-14n-9e, spud.

Oklahoma County: Denver P & R's Bailey 1, sw se 19-13n-4w, lcn.

Harper-Turner's Haugh 1, nw nw 5-14n-1w, lcn.

EAST TEXAS

Hunt County: Hollandsworth Dr. Co.-W. F. Nenny's John Hancock 1, 1148 ft e 1299 ft s of m/n/nw cor J. H. Handlin sur, 2 mi ne Cash, lcn.

WEST TEXAS

Crane County: Texas Co.'s Chas. W. Hobbs-Shell 1, c n¼ of n¼ H&TC 46, blk 35, rur for Ellenburger test.

Midland County: Barnsdall Oil Co.'s Wilson Bryant 1, 1980 ft nsl 1996 ft wel T&P Ry. 36, blk 39, T-3-S, lcn 6000-ft test.

Pecos County: Phillips' Iowa Realty Trust 1, 660 ft fr ne and nw lines H&GN 139, blk 10, lcn Ellenburger test.

Yoakum County: Neville G. Penrose's A. M. Brownfield-Humble 1, c ne ne sec 563, blk D, J. H. Gibson sur, lcn 5500-ft test.

WEST CENTRAL TEXAS

Comanche County: F. O. Akin et al's E. G. Hauser 1, 660 ft out se cor, C. H. Heffner sur, lcn 2800-ft test.

Jones County: Fain & McGaha's Rex A. Smith 1, 330 ft nsl 990 ft ewl T&P 3, blk 17, lcn 4000-ft test.

Stephens County: Beacon O&R Co.'s J. Q. Corbett 1, 850 ft nsl and 360 ft wel TE&L Co. sec 1070, elev 1061 ft, lcn 4000-ft test.

NORTH TEXAS

Archer County: Akin-Dimock et al's H. M. Perryman 1, 1412½ ft snl 300 ft wel sec 16, J. W. Harris Club Ranch, lcn 1600-ft test.

M. W. Blair Oil Co.'s S. L. Scott 1, 600 ft out se cor lot 15, Thos. McCoy sur A-269, lcn 1250-ft test.

M. W. Blair Oil Co.'s Mrs. A. Wilhelm 1, 800 ft nsl 2000 ft ewl TE&L Co. sec 2420, lcn 1450-ft test.

Clay County: Continental-W. B. Omohundro's L. Courtney 1, 330 ft out nw cor e½ sec 11, E. Hall sur A-193, 7 mi ne Henrietta, rur for 6500-ft test.

Grayson County: Sinclair Prairie's G. A. Fischer 1, 2309 ft nsl 1720 ft wel, J. Shelton sur A-1102, 2 mi s Whiteboro, rur for Ordovician test.

Haskell County: Hunter & Hunter et al's J. D. Hughes 1, 1830 ft nsl 4900 ft wel of M. Travieso sur, dr 1660 ft.

Montague County: J. A. McCarty-J. P. Coleman's J. B. Howard 1, 330 ft out sw cor, G. W. Coffee sur, 3 mi se Spanish Fort, lcn 4500-ft test.

Young County: Belfort Oil Co.'s P. B. Wyatt 1, 364 ft snl 330 ft ewl, T. M. Bradwell sur A-1664, lcn 4900-ft test.

TEXAS GULF COAST

Brazoria County: Kirby Petroleum-Continental Oil's Ramsey State Prison Farm 1, 40-ac lse, S. F. Austin sur 9, 5 mi sw Bonney, lcn 8500-ft test.

San Jacinto County: Stanolind's Falvey 1, 493-ac lse, J. Fernandez de Rumayer sur, 6 mi se Shepherd, lcn 10,000-ft test.

Trinity County: American Liberty's Due 1, 60-ac lse, S. E. Buffington sur, 7 mi ne Apple Springs, lcn 5200-ft test.

LOWER TEXAS COAST

Bee County: W. Earl Rowe's Peters 1, 200-ac tr, Edwin Morehouse sur, lcn 4500-ft test.

Jim Wells County: Smith & Story's Gonzales 2, Armagosa area, 500-ac lse, La Tinaja de Lara Gr, lcn 3000-ft test.

Victoria County: Rowan & Hope's Wagner 1, 1787 ft fr sw 2173 ft fr nwl Indianola RR Co sur, 4 mi e Hoard's Creek field, lcn 4500-ft test.

SOUTHWEST TEXAS

Duval County: American Republics' Reyes 1, 467 ft fr ne&nwl sur 4, 3 mi w of Bridwell field, lcn.

Webb County: Dulup Oil Co.'s Garcia 3, blk 34, sec 592, Killam subdvn, Los Ajuelos Gr, lcn 2000-ft test.

Squeaks from the Bull Wheel

Value Received

A doctor was cornered by a lady at a social gathering who occupied an hour of his time in a description of the pain she occasionally suffered in her knee. "What do you think I should do about it, Doctor?"

"I would advise you to give up drinking and go to bed early. And wherever you go be sure to keep your knees warm."

"Since this is a social occasion I daresay that I cannot send you a check for your professional services."

"No, the advice I give at parties never costs anything." He paused and then added, "But it never cures anything either."

Definitely

Did you hear what happened to my neighbor who was milking the cow when she was struck by lightning?

No. What happened?

He was left holding the bag.

Reverse

Do you believe that tight clothes stop circulation?

Not with a woman. The tighter the clothes the more she's in circulation.

Pome

Of all the fishes in the seas,
My favorite is the bass.
He climbs up into sea-weed trees,
And slides down on his hands and knees.

Cured

"Your wife used to be terribly nervous. Now she's as cool and composed as a cucumber. What cured her?"

"The doctor did. He told her that her kind of nervousness was the natural result of advancing age."

End by Yodeling

I've asked for money, I've begged for money, and I've cried for money, lady.

Have you ever thought of working for it, my man?

Not yet, mum. You see, I'm going through the alphabet and I ain't got to W yet!

And How

"Vacation plans don't bother me," said William Henry Penny. "My wife decides where I shall go, and my employer when."

Confusing

Iss potatoes in two kinds, male and fimmale?

Of course not. Why?

It's werry fonny—the Keptin's telling me I should peel two sex of potatoes.

Safe Secret

"Can you keep a secret?"

"Sure."

"I need to borrow some money."

"Don't worry. It's just as if I never heard it."

Right Gender

A young ensign with a reputation as a Lothario tried to refuse when he was invited to a charity affair. He gave the excuse that he was working on something important.

"Oh, in that case, just bring your work along with you," the hostess suggested. "We'd love to have her, too."

Defined

A teacher tells about a little boy whose coat was to difficult to fasten that she went to his assistance. As she tugged at the coat she said:

"Did your mother hook this coat for you?"

"No, she bought it."

BUSINESS

AFTER THE WAR SHOULD BE EXCEPTIONALLY GOOD IN THE SOUTHWEST

Alert manufacturers in this favored area are already making post-war connections. Dedman's outstanding war record in making uniform, sound castings is attracting such manufacturers.

QUALITY ELECTRIC STEEL CASTINGS

•

Protect yourself on a dependable source of post-war supply for the finest castings obtainable by arranging with Dedman's now before its entire capacity is spoken for.

DEDMAN

FOUNDRY & MACHINE CO.

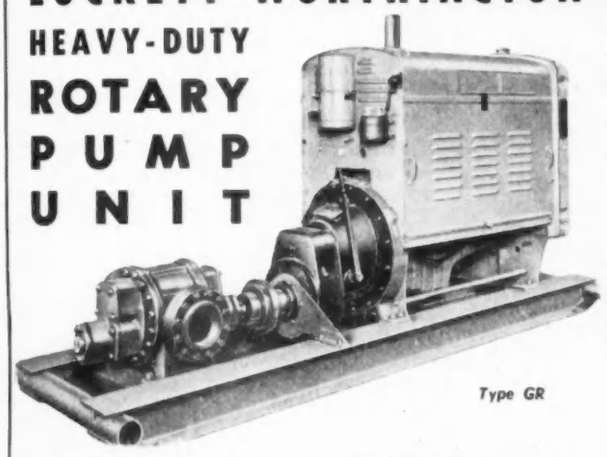
HOUSTON, TEXAS

☆ ☆ ☆ ☆

LOCKETT-WORTHINGTON

HEAVY-DUTY

ROTARY PUMP UNIT



Type GR

LOCKETT Dealers — from warehouses located at, or near, the principal oil fields of Texas and Louisiana — can supply Worthington Pumps to meet every pumping need.

Worthington Pumps are adaptable for use with any power unit — gas, gasoline, Diesel, or electric motor of any type or manufacture.

Lockett Dealers can also promptly supply, from warehouse stock, *genuine* Worthington Repair Parts. We also carry a large replenishing stock of Worthington Pumps and *genuine* Worthington Repair Parts at our Houston and New Orleans Warehouses. For dependable, efficient service, let a Lockett Dealer supply your pump-equipment needs.

A. M. LOCKETT & COMPANY, LTD.

NEW ORLEANS HOUSTON DALLAS

Used Oil Field *and* Industrial Equipment

•

Casing *and* Line Pipe

•

Drilling Equipment

•

Valves, Flanges, Swages, Fittings *and* Couplings

•

Casing Pulling *and* Shooting

•

Pipe Straightening, Testing, Machine Work

•

Rental Service:
Equipment *and* Tools, Drill *and* Line Pipe, Tongs, Slips, Spiders, etc.

SPECIAL

12 x 12 Gardner-Denver Twin Cylinder Engine Model E. A. 1000 — Slide Valve — Fully Enclosed — On Skids.

15¼ x 7¾ x 20 Gardner-Denver Mud Pump Model F. B. — Slide Valve — On Skids.

14½ x 7¼ x 20 Gardner-Denver Mud Pump Model E. L. — Slide Valve — On Skids.

•

OILFIELD SALVAGE CO., INC.

Phone Charter 4-6914 2019 Brooks Street

P. O. Box 2589

HOUSTON 1, TEXAS

Notes for the Equipment Buyer and User

Two New Executives for A-1 Bit & Tool Company

A-1 Bit & Tool Company, Houston, has recently purchased assets of Universal Core Barrel Company, also of Houston. Consolidation of the two companies under the operating name of A-1 Bit & Tool Company, Ltd., and the addition of two executives are a part of an expansion program which the company has started.

C. L. Clausel

C. L. Clausel, executive head of the organization, announces that J. R. Yancey and Reagan J. Voss are now associated with the company, Yancey as chief engineer and Voss as chief administrative officer.

Yancey graduated from Rice Institute in 1930 and went with the Gray Tool Company, as engineer, and advanced to vice president of that company. He has done much engineering research on high - pressure - well - completion equipment.

Voss was associated with the Cullinan interests for 19 years, first with the Galena Signal Oil Company and later with the American Republics Corporation.

Products of the company include bits, wire line coring equipment and casing milling tools. Several new tools now being field tested will soon be ready for the trade, it was said.

J. R. Yancey

R. J. Voss

Petroleum Supply Company, founded in 1941, announces removal of its office and warehouse from 1204 Quitman to new and larger quarters at 2110 Quitman street, Houston. Capital stock of the company has been increased to $50,000.00. F. M. Lankfod continues as vice president and store manager. Other officers of the company are M. M. Cunningham, president and general manager, and C. W. Shirley, secretary and treasurer. The company deals in oil well and refinery equipment.

The company is active in California, Tri-State Basin, Coastal areas and foreign fields. A field organization is maintained at all service points east of the Rockies. Domestic field contacts are kept through sales engineers and service operators. Baash-Ross Tool Company handles A-1 Bit equipment on the West Coast. The export representative is I. Frank Brown, 30 Rockefeller Plaza, New York.

Goggle Cleaning Cabinet

MINE SAFETY APPLIANCE COMPANY

Mine Safety Appliances Company, Pittsburgh, Pennsylvania, announces the M. S. A. Goggle Cleaning Cabinet, to encourage workmen to wear their goggles and keep them clean.

The cabinet is equipped with Fogpruf, a lens cleaning and anti-fogging agent, and optical wiping tissues. The unit is suitable for mounting in strategic work locations and in repair rooms, tool rooms, locker rooms or on traveling goggle dispensing carts. Two vials of Fogpruf are concealed within the dispensing block permitting the cleaning of two pair of goggles at one time. A tap on either button of the dispenser sprays Fogpruf on the lens. Cleaning tissues are withdrawn from an opening in the top of the dispensing station.

Electronic Vapor Detector

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pennsylvania, has developed an experimental device to detect oxygen and water vapor in furnace gases used for heat treating. The device utilizes electrons to do the detecting.

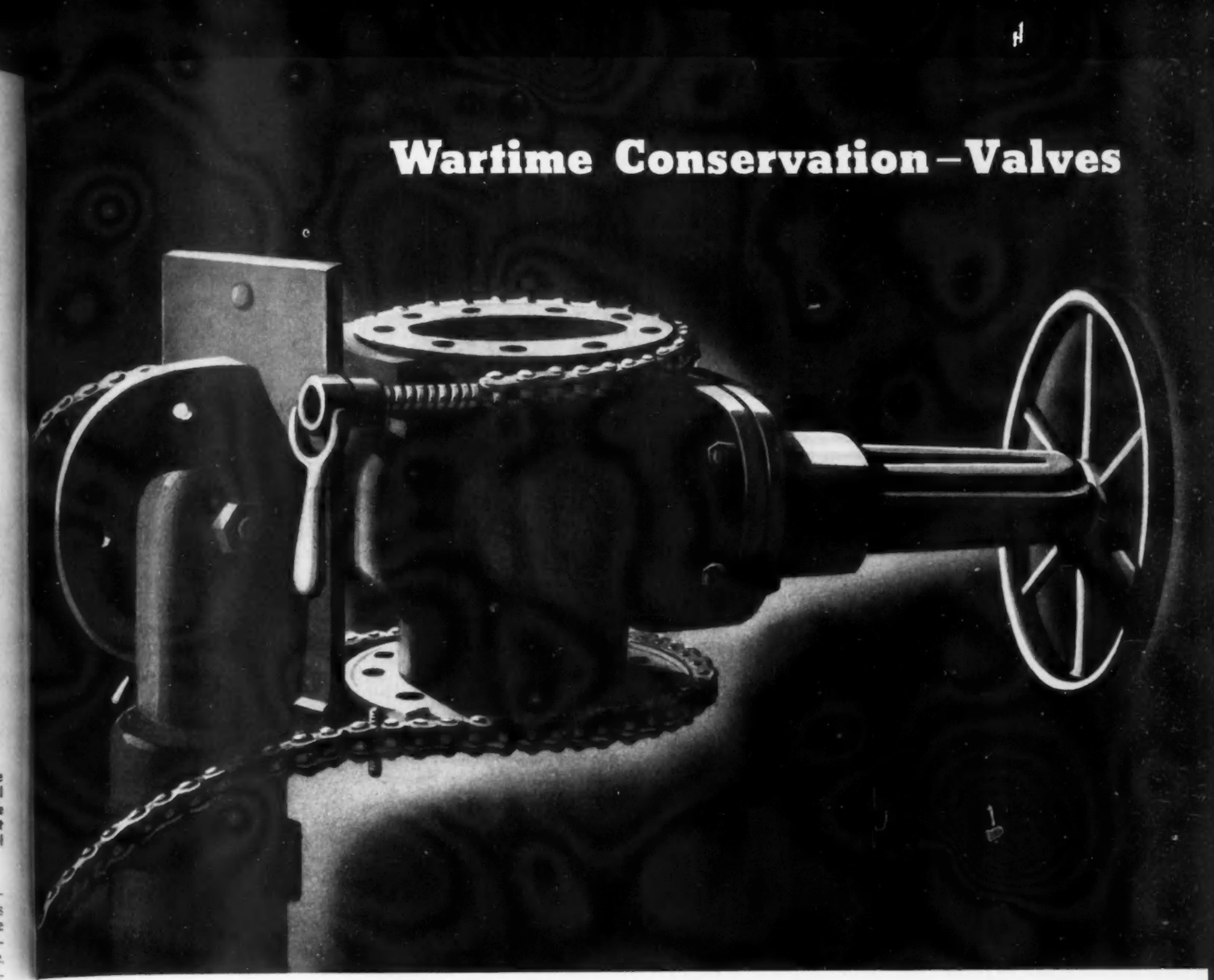
The electrons furnish a continuous report of their findings to the operator. Oxygen and water vapor is ionized by electronic bombardment, whereas constituents of furnace gases are not.

The arrangement draws a sample of the gas mixture past an electron gun. As long as the gas is free of impurities, the electron current is constant. However, when oxygen or water vapor are mixed with the gas, some of the electrons are utilized in forming negative ions. This causes a measurable decrease in electron current. The tube employed is essentially a diode tube which operates with both ends open. The electron emitter and the plate continually operate in a stream of hot furnace gases.

This electronic dew-point indicator removes the difficulty of judging visually determined dew points, a method subject to considerable variation. It also provides a continuous indication of gas quality.

Office and Plant of A-1 Bit & Tool Company

Wartime Conservation—Valves



Information supplied by the "Oil Weekly"

Many companies, instead of replacing or returning damaged valves to the manufacturer for reconditioning, now face the job of repairing or reworking the valves themselves.

Heavy valves, above 4- or, at most, 6-inch size, are being most advantageously reconditioned on special stands, rather than on the floor, providing better access for thorough inspection. The stand consists of a pedestal-mounted flat plate carrying chain vises with replaceable jaws, each formed to fit the flange circles of the various sizes of valves to be reworked. By setting the valve upright in the jaws, and clamping tightly with the chains, the unit is held rigidly, even when the plate is rotated 90 degrees from horizontal in either direction and there pinned to permit work on either surface of the contacting or sealing faces within the valve body.

Use of the stand permits light from below, clearance for dropping cuttings and waste material, and proper height for most effective handwork. The vise jaws and gripping chains, being in contact only with the circumferences of the flanges of the valve body, permit reconditioning bolt holes and gasket surfaces as well as the interior.

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.

MOLYBDIC OXIDE, BRIQUETTED OR CANNED • FERROMOLYBDENUM • "CALCIUM MOLYBDATE"

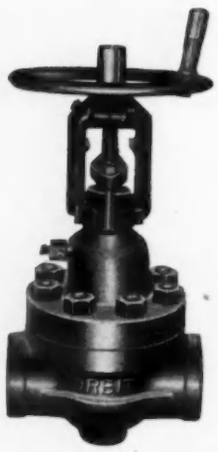
Climax Molybdenum Company

500 Fifth Avenue · New York City

MOLY

ORBIT VALVES

Are Built to "Take It"



ORBIT FLOW LINE VALVE

A full round opening valve that operates easily under high pressures. No grease required to effect a seal. Compact in design, yet built to "take it."

•

YOUR ORBIT VALVES

will last for the duration. Meanwhile, if you have any questions regarding their care or maintenance, write us.

•

OIL WELL IMPROVEMENTS CO.

SINCE 1912

TULSA, OKLAHOMA

Men in the Industry's News

MERCER H. PARKS, petroleum engineer with Humble Oil & Refining Company, Houston, is on six-months leave to become assistant to Frank A. Watts, director of materials for the Petroleum Administration for War at Washington, and will devote his time to internal combustion engines. Parks joined Humble Oil & Refining Company as petroleum engineer in 1928 and has served in that capacity since that date except for a period in 1932-34 when he was with The Carter Oil Company as division engineer. He is chairman of the subcommittee on internal combustion engines for American Petroleum Institute.

C. LEE CORNELIUS, scout for Gulf Oil Corporation, has been elected president of West Texas Oil Scouts Association, Midland. Other officers are Arvid A. Jones, The Atlantic Refining Company, and Joe G. Sauer, Cities Service Oil Company, vice presidents; and Orville L. McNew, Amerada Petroleum Corporation, secretary-treasurer. The executive committee consists of Paul R. Martin, Clinton W. Ledebur, James S. Meriwether and James R. Maedgen.

JOSEPH H. MARKLEY, JR., West Texas division geologist for The Texas Company, was elected president of Fort Worth Geological Society, succeeding Karl A. Mygdal, Pure Oil Company, Willard Gill, Pure Oil Company, and Spencer R. Normand, Independent Exploration Company, were chosen vice president and secretary-treasurer, respectively.

C. H. MARSHALL has been named Texas manager of Allied Oil Company, Cleveland, Ohio, which is undertaking a wildcat drilling program in East Texas, with district office in the Southwest Reserve Life Building, Longview. Marshall is also in charge of the Central Pipe Line Company, an affiliate that operates gathering systems in the Quitman, Hawkins and East Texas fields.

CARL L. ZAK has been made manager of tubular sales for Pittsburgh Steel Company, Pittsburgh, Pennsylvania. Zak has been secretary of the Seamless Steel Tube Institute since 1941, was with Youngstown Sheet and Tube Company, Youngstown, Ohio, for several years in sales capacities concerned with seamless and welded tubes and pipe, and earlier was with Globe Steel Tubes Company, Milwaukee, Wisconsin, in sales engineering work, inspection, and mill scheduling.

J. F. O'SHAUGHNESSY, Wichita, has been elected president of Kansas Independent Oil and Gas Association.

H. E. DEGLER, of the mechanical engineering department of the University of Texas, and chairman of the oil and gas power division of the American Society of Mechanical Engineers, spoke to the Engineers Club of Tulsa January 17 on "Engineering During the Post-war Period."

J. H. TICE has been appointed district sales manager at Tulsa for Jones & Laughlin Steel Corporation, succeeding R. J. Woods, Jr., who has been transferred to the Frick-Reid Supply Corporation as district manager of tube sales at Tulsa. Tice started with the company in 1927 in the St. Louis office and was transferred to Tulsa in 1937.

C. T. HAPGOOD, formerly assistant district sales manager for Jones & Laughlin Steel Corporation at Houston, has been transferred to Pittsburgh as assistant manager of tubular products sales in charge of oil-country goods. He started with J & L in 1930 in the tube mills and in 1934 was transferred to the sales department. In 1935 he was sent to the Los Angeles office where he became assistant district sales manager in 1941. Later that same year he went to Houston in the same capacity.

GRANT DAVIS has been made sales manager for Standard Steel Corporation, of Los Angeles, California. He was formerly general sales manager with the Shovel and Crane Division of Lima Locomotive Works, and was later West Coast district manager for Koehring Company, Milwaukee.

E. M. SMITH, founder and for many years president of Emsco Derrick & Equipment Company and other Emsco organizations, announces the purchase of a half interest in Hake Galvanizing Company of Harvey (New Orleans), Louisiana, and his return to active participation in the industrial affairs of the Mid-Continent area.

W. V. HOWARD, consultant in petroleum geology and economics, has opened offices in the McBirney Building, Tulsa, Oklahoma. He was formerly field editor for The Oil and Gas Journal.

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